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SUBJECT INDEX TO THIS ISSUE

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FUNDAMENTALS IN THE DEVELOPMENT OF A COUNTY HEALTH DEPARTMENT *

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UNIVERSITY, MISS.

During recent years, state departments of health have made remarkable progress in the control of infectious disease and in the promotion of public health. There has also been a gratifying advancement in the increasingly effective service of health organizations in incorporated towns and cities. This splendid achievement in the evolution of preventive medicine is an incentive to maintaining too large an overhead expense in an attempt to administer health work through central organizations on a state-wide basis. Experience shows that the competent health officer, at work and in touch from day to day with the people of a community, stimulates public confidence and can obtain vastly greater results over a period of years than can be obtained by general educational methods in the prevention and suppression of disease by a state department of health. Now, health authorities generally concede that the continued reduction of morbidity and mortality rates and the raising of health standards can only be effectively accomplished by establishing and maintaining efficient local or county health departments.

This is not to be construed to mean that there should not be a sense of proportion in the maintenance of a central organization, which we know to be indispensable for the reinforcement of effort put forth in carrying on health activities by county and municipal departments of health. My purpose, therefore, is not to detract from or to depreciate in any sense the necessity for providing an adequate appropriation in the support of the state department. It is rather to accentuate the imperative need for placing constant emphasis on continuous, intelligent, and effective effort through local health organizations, realizing that the state rendering a real public health service to the largest number of citizens is most efficient. To render this service, it is essential to keep in close personal touch with the individual citizen.

Vital statistics prove, and every informed physician and health officer knows, that the health of the rural population is only afforded proper protection in limited areas as far as medical service and the betterment of health conditions is concerned. This is attested by the fact that not more than 12 per cent. of the rural population of the United States enjoys the privilege of anything approaching modern health supervision. The life, efficiency and productive capacity of the remaining 88 per cent., living on farms and in small towns, is being impaired because of the lack of medical care. The economic stability of the nation depends on the progress of rural people, and, for this reason, they should be assured just as good medical attention and health protection as any other part of the population. It is then obvious that a fundamental step of primary importance in the improvement of the health machinery of this country is for health authorities to determine on a definite and sane policy for properly safeguarding the health of the 5,406,000 people living in rural areas. With the recognition of these facts, it would indeed be disastrous for those who occupy positions of scientific leadership in directing the public health activities of the respective states not to show concerted action and endeavor persistently to create permanent heal organizations in the 3,065 counties of the United States, which is basic in conserving the economic efficiency of the rural population.

UNIT OF RURAL HEALTH ADMINISTRATION

In setting up a system of rural health administration, it is manifest that some existing unit of government should be chosen to represent as nearly as practicable the needs of the organization to be developed. The convincing demonstrations that have been made in the control of disease by official and unofficial health agencies during the last decade indicate that the county is best adapted for such an undertaking. It has the advantage of levying and collecting taxes, creating budgets, accounting for expenditures and placing the police power at the disposal of any county agency in the enforcement of law. It is of practical interest to state that a county has an average rural population of approximately 17,000.

Prior to 1917 but little attention was given to the establishment of county health organizations, and only a few of them existed. During the following years, financial aid was made available for certain counties in the states by the International Health Board and also by the United States Public Health Service. With this impetus, gratifying advancement has been made in this phase of public health endeavor. There are now 260 counties recorded as having full-time health departments directed on a reasonably efficient basis in as many as thirty-one states. The largest number, forty-seven, is reported in the state of Ohio, with North Carolina occupying the creditable position of having as many as thirty-three at this time. This means that approximately 60 per cent. of the

* Chairman's address, read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

rural population in Ohio is now under a full-time health service and about 35 per cent. in North Carolina. The results achieved in counties where these demonstrations have been conducted establish beyond question the success of such a scheme in rural health administration. The cost is not excessive, and the system commends itself to the judgment of those who have become acquainted with its operation. While the county is the ideal unit of area in adopting any scheme of rural health administration where counties are small in size, sparcely populated and lacking in per capita wealth, legal provision may be made for two or more counties to combine, forming a health district; such an arrangement, however, should be the exceptional rather than the usual method.

PERMANENT ORGANIZATION OF COUNTY HEALTH DEPARTMENTS

Through the cooperation of official and unofficial health agencies, it seems that the principle of financial aid in the creation and maintenance of a county health service has been established for an indefinite period. Judging from my own experience and observation, I am impressed with the necessity of a definite policy being created by legislative enactment in each state, in establishing a plan of financial cooperation with the respective counties for initiating and organizing on a permanent basis county health departments. It is encouraging that there has been a state subsidy provided for rural health work, even though under an indefinite administrative policy, during the last several years in a number of states, notably Ohio, Alabama, Delaware, Mississippi, North Carolina, Missouri, South Carolina, Tennessee, Virginia, Kentucky, Louisiana, Texas, West Virginia and New Mexico.

While there has been need and doubtless still is for campaigns along special lines of health work and against particular diseases on a state-wide basis, the time has come when a more concerted effort should be made by federal and voluntary agencies for the permanent organization of county health departments. By setting up a system of rural health service in states through financial cooperation with the respective counties, a tremendous gain will be made at once in achieving the next step of fundamental importance in the development of an adequate system of health protection for the rural population.

ADJUSTMENT OF RESPONSIBILITY BETWEEN STATE AND COUNTY AUTHORITIES

With the proper decentralization of authority in health administration, I can conceive of no better way of adjusting the administrative responsibility between the state and county authorities than on the basis of a state subsidy. The fact that the state department of health is provided with a definite fund by legislative enactment for the promotion of county health work, immediately secures for the state authorities a voice in rural health administration. Moreover, the wisdom of such a plan has been amply sustained by the principles followed in making allotments for county health demonstrations by the Public Health Service and the International Health Board. The exact measure of authority that should be assumed by the state over local units of health administration cannot in the nature of things be accurately determined, but that there is a definite need for careful supervision by the state cannot be questioned. It is clear that the control of communicable disease can only be effectively secured through a coordination between the state and county authorities. It is certainly desirable that the state health department provide the counties with literature and standard forms for keeping accurate and uniform records and for making reports. It is also necessary that the most exacting attitude be maintained by state authorities in evaluating the results accomplished in any system of rural health administration. Further than this, the state will act wisely in assuming a judicial attitude, offering counsel when it is needed to sustain or increase the efficiency of the work.

In securing an equitable relation between the state and county authorities, an important factor is the attitude of the local health officer. By virtue of his appointment, he should have a sense of obligation to the state department of heatlh. Recently, legislation has been enacted in Mississippi permitting the state board of health to recommend the director of the health department to the board of supervisors or the board of control of a county, and placing the direction of the work under the county authorities with general supervision of the state board of health. If a physician who is not acceptable is recommended for health officer, request may be made for another recommendation. In other words, the official board of the county has the option of satisfying itself in regard to the person chosen, although the directing influence in the selection is in the hands of the state authorities where it properly belongs. This plan has the advantage of emphasizing the principle of the state department of health acting as a guiding influence, under legislative provision, in the organization of rural health work and its general supervision, without assuming undue authority. While there are those who advocate that the widest latitude be afforded the county in local health administration, there is an evident need for caution, in our present stage of public health education and inadequate intelligent leadership, against placing too much responsibility or authority in the hands of county officials. It is, however, a sound policy to make the citizenship of a county appreciate the fact that a local health project is of more vital concern to them than it is to the state. This fact, together with the right of local self-government, should cause citizens of a community to assume gradually the responsibility not only for the expenditure of funds, but also for the methods used and the results obtained.

To summarize, the state should afford leadership in county health work, exerting a directive influence in choosing the local health officers, should furnish technical information, advise concerning the methods employed, and maintain an attitude of general supervision, reinforcing local authorities in the enforcement of health regulations, and assume an exacting attitude concerning the degree of efficiency attained in the work done and also, when possible, make provision for carrying on research in the advancement of field work.

THE HEALTH OFFICER—ESSENTIAL QUALIFICATIONS

In the successful execution of county health work, no influence will be more potent in achieving success than the personality and resourcefulness of the health director. There are certain native characteristics which each health officer must possess. Above all things, he should exemplify honesty of purpose and straightforwardness in dealing with others. He should be diplomatic, but he should not be a politician. The

health officer who is receptive to constructive criticism, who can properly visualize the health problems, who has a genius for work, and who is imbued with the spirit of service, embodies the personal qualities that will command the respect and confidence of the public, without which success is impossible. Much of the failure which has come under my observation has been due to the personality of the health officer rather than to his lack of training and experience, or to local conditions. Recognizing the intrinsic value of the personal qualities of the health officer, the question of his training is of paramount importance. The present status of public health education does not admit of a large number of specially trained men. Therefore, for the time being, securing health officers is largely a matter of selecting physicians who by nature are adapted to this work, and offering them such training and experience as may be feasible in a limited period of time, by observation of the work of men in the field and by giving specific instruction before they undertake the task. A physician with a reasonably good knowledge of general medicine such as is acquired in a reputable school, afforded opportunity of learning public health methods, and possessing tact, energy, common sense, and the ability to apply his knowledge, should succeed.

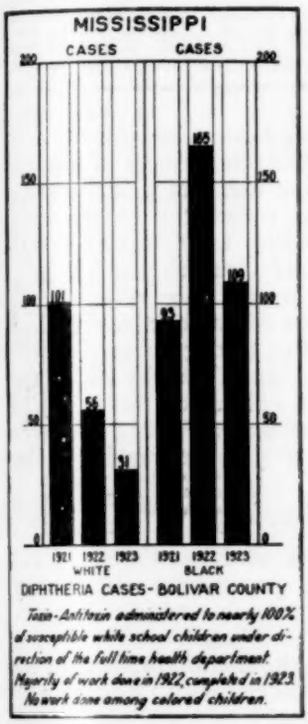

Chart 1.—Results achieved in the control of diphtheria by the full-time health department, Bolivar County, Miss. Toxin-antitoxin administered to approximately 100 per cent. of susceptible white school children, and none given to negro children during the years 1922 and 1923 while white children were being immunized.

The need of the future for trained health officers is to be met by offering adequate courses in preventive medicine and public health in schools of medicine, so correlated with the other subjects of the curriculum as to provide practical teaching that will emphasize to the student the preventive idea, and develop those qualities of mind and heart which will exert a wholesome influence in causing young men to select public health as a career. Until this result is secured in medical education, we must be content to utilize all available material with a modicum of training in the promotion of public health activities.

A COUNTY HEALTH DEPARTMENT—PERSONNEL AND BUDGET

A full-time county health department is an organization consisting of two or more persons devoting their entire time to the business of preventing and controlling disease and advancing the public health. Much difference of opinion is being expressed concerning the necessary personnel required in such a service. Obviously, this will be determined by the public interest and resources of the county. Judging from my own experience, a minimum personnel for a county of average rural population should not be less than a medical health officer and a clerk-microscopist. With this as a beginning, the additional force may be added as the citizenship of the county is impressed with the needs and importance of the work being done.

If our experience is reliable up to the present time, a county of average size with a population of about 25,000 or 30,000 should have a personnel consisting of a medical health officer, a clerk-microscopist, a health nurse, and a sanitary inspector. It may, however, be strategic in obtaining this staff to begin simply with the health officer, and gradually develop the necessary working force as the resources of the county will permit. Some confusion is arising at present, and necessarily so in this pioneer stage of public health administration, in regard to what constitutes a full-time health service. This is due to the fact that in many counties different agencies have become interested. A variable policy is being pursued, and too often there is a lack of concerted action among official as well as voluntary agencies. In some instances, only inspectors are employed. In other cases, a Red Cross worker is used, a nurse giving special attention to tuberculosis, a maternal and infant hygiene nurse, or a general county health nurse. All these agencies are of value in enlightening the public concerning the importance of applying the principles of preventive medicine, but, unfortunately, there is a tendency on the part of community leaders to regard such efforts as the end to be attained rather than as a means of accomplishing the end desired, namely, an efficient health organization.

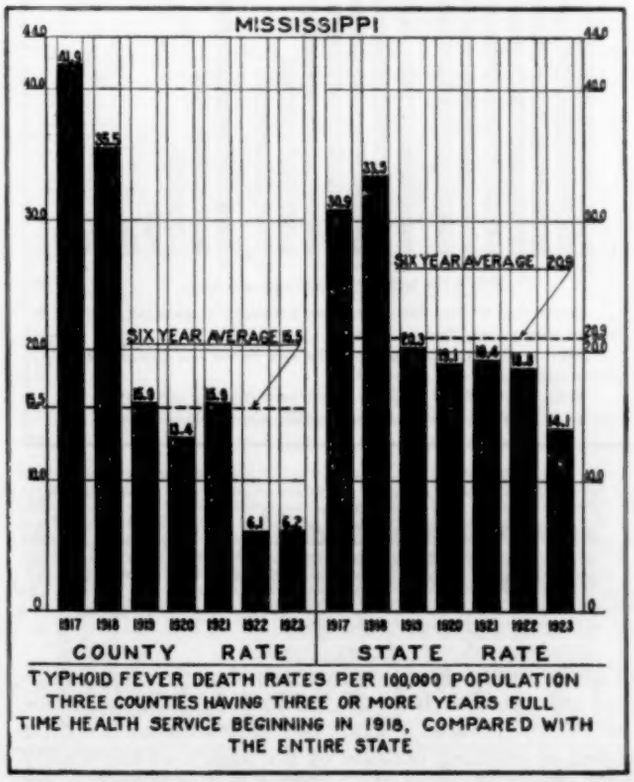

Chart 2.—Reduction of typhoid fever in three counties with full-time departments of health for a period of three or more years beginning with 1918, as compared with the state rate. The typhoid death rates per hundred thousand population for Forrest, Harrison and Monroe counties, Miss., for the six years 1918 to 1923 is 15.5, while the state rate for the corresponding period is 20.9. Intensive measures have been used in the control of typhoid in each of these counties. A campaign has also been conducted during consecutive years throughout the entire state for the control of this disease, and a definite decrease of typhoid has been obtained.

There is a growing disposition to express satisfaction with the services of the county health nurse only, who may be engaged in some special line of work, but who because of the difficult problems involved can only hope to touch the broad program of public health in a more or less superficial way. The suggestion I wish to offer is that, in the utilization of such forces, there should be a clear understanding of the desired objective, and the goal to be obtained should be held up consistently before the people. Otherwise, such work will retard or may defeat the fundamental need in the advancement of public health, and in the end will weaken rather than strengthen the scheme of rural health administration.

In initiating a permanent health organization in a county, adequate financial support is of prime importance. The expenditures which have been incurred for

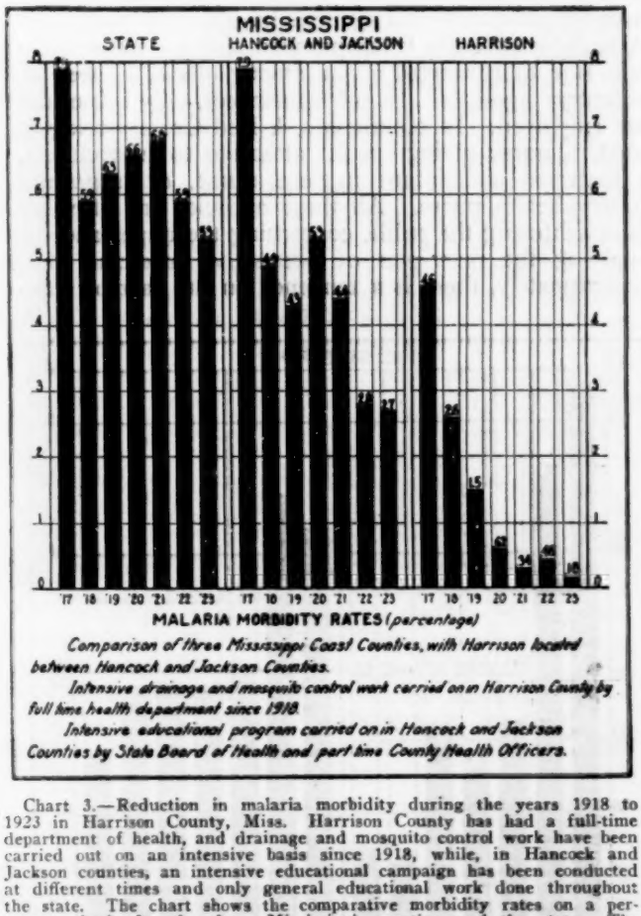
MISSISSIPPI
STATE
HANCOCK AND JACKSON
HARRISON
'17 '18 '19 '20 '21 '22 '23 '17 '18 '19 '20 '21 '22 '23 '17 '18 '19 '20 '21 '22 '23
MALARIA MORBIDITY RATES (percentage)
Comparison of three Mississippi Coast Counties, with Harrison located between Hancock and Jackson Counties.
Intensive drainage and mosquito control work carried on in Harrison County by full time health department since 1918.
Intensive educational program carried on in Hancock and Jackson Counties by State Board of Health and part time County Health Officers.

Chart 3.—Reduction in malaria morbidity during the years 1918 to 1923 in Harrison County, Miss. Harrison County has had a full-time department of health, and drainage and mosquito control work have been carried out on an intensive basis since 1918, while, in Hancock and Jackson counties, an intensive educational campaign has been conducted at different times and only general educational work done throughout the state. The chart shows the comparative morbidity rates on a percentage basis for the three Mississippi counties, and the state. The morbidity reports in Harrison County have been made daily by physicians since 1918 on cards giving essential data.

full-time county health service, under average conditions, indicate that from $7,500 to $10,000 will provide a workable budget. This has been increased in a number of counties because of the ability of the county health officer to enlist the interest and cooperative aid of local voluntary agencies. In preparing a budget, the items of expenditure should indicate clearly the amount paid for salaries and traveling expense allowance, and it is likewise essential that a degree of flexibility be obtained. This may be effected by having an item for contingent expense, varying from $600 to $900 per annum. It is of interest to note the range of salaries paid in county health organizations which have been promoted by the International Health Board and the United States Public Health Service.

The maximum given in this tabulation is not exceeded except in one project, namely, that carried out in San Joaquin County, California. However, it should be indicated that the budget allowed in that county is $75,300.

TABLE 1.—*Range of Salaries*

	Per Annum
Full-time county health officer	$1,800 to $5,100
Clerk-microscopist (technician)	900 to 3,900
Public health nurse	1,135 to 2,100
Sanitary inspector	1,200 to 2,100

In the creation of a county health department, it is imperative to bear in mind that the element of permanency is the essential objective, and that a constructive policy should therefore be constantly observed in advocating increased expenditures for additional workers. The health officer should visualize the problems of the county, and should pursue a course that will secure definite and measurable results over a period of years rather than make an effort through large expenditures to obtain an immediate return, thereby taking the risk of unduly persuading the officials of the county to appropriate money in such amounts as will be excessive when measured in terms of possible results to be obtained.

SOME ESSENTIALS IN OUTLINING A PROGRAM

Time will not permit a detailed discussion of the outline of the program or of the methods employed in the control of disease in a county, but emphasis should be placed on making a careful health survey at the outset in order to evaluate the health problems preliminary to outlining a practical program. The plan of organization must be determined by a knowledge of the morbidity and mortality rates, the readiness with which a disease may be placed under control, disease incidence from the standpoint of economic loss, and it is also fundamental that the most discriminating judgment be displayed in acceding to popular demand for certain lines of public health work. In initiating intensive county health work in the southern states, special consideration was given to the control of filth-borne diseases such as typhoid fever, diarrhea, dysentery, and hookworm disease, which is illustrative of the vulnerability of disease to public health attack. Special demonstrations have been conducted for the control of malaria, the controlling factors being the high morbidity, the readiness with which it responds to attack, and the loss incurred from an economic standpoint. Much attention is also being given, and justly so, to maternal and infant hygiene, medical examination of school children, and the correction of remediable physical defects, not only because of their far reaching importance, but also for the reason that there is a popular demand for the conservation of child health. Interest in the control of communicable disease has been focused on the holding of clinics for immunization against typhoid, smallpox, and diphtheria. In gaining the necessary local support for the permanent maintenance of a county health department, the proper strategy must be used to enlist the intelligent cooperation of community leaders. The program should be so varied during consecutive years as not only to hold the gains that have been made, but also to enlist and maintain renewed interest in adequate financial support of the work.

There is one phase of the program of county health work which merits brief consideration, namely, the

place and relative importance of laboratory work. In Mississippi, reasonably efficient laboratories have been conducted in three counties having above the average of per capita wealth, with each county in charge of a competent technician.

It is evident that a definite appeal can be made at the outset to the practitioner of medicine, owing to the aid which is offered him in the prompt diagnosis of

TABLE 2.—*Laboratory Work Done in Bolivar, Coahoma and Forrest Counties, Mississippi, During the Years 1922 and 1923*

Examination	Bolivar		Coahoma		Forrest	
	1922	1923	1922	1923	1922	1923
Typhoid	278	321	146	116	64	67
Malaria	3,158	3,597	1,228	1,120	398	219
Tuberculosis	122	125	118	144	124	108
Diphtheria	233	159	648	388	96	90
Gonorrhea	87	291	144	156	963	810
Syphilis (Wassermann)	296	468	1,357	2,105	177	...
Special fecal exam.	36	126	36	14	9	719
Urine	902	836	871	1,399	1,029	983
Blood counts	82	81	565	632	226	282
Milk	..	11	59	229	...	...
Water	..	..	16	36	...	...
Miscellaneous	..	16	..	97	...	...
Babies	17	27	3	21	...	...
Totals	5,241	6,038	5,150	6,437	3,114	3,278

TABLE 3.—*Total Expenditures for Maintenance and Cost for Laboratory Work in Bolivar, Coahoma and Forrest Counties for the Years 1922 and 1923*

	Bolivar		Coahoma		Forrest	
	Lab.	Total	Lab.	Total	Lab.	Total
1922	$3,304.08	$12,431.92	$2,611.78	$9,889.59	$2,288.50	$7,647.75
1923	3,420.60	10,597.06	2,382.89	9,920.58	2,257.27	11,212.56
Total	$6,724.68	$23,028.98	$4,994.67	$19,810.17	$4,545.86	$18,860.31

	Bolivar	Coahoma	Forrest
Percentage of laboratory cost to total expenditure	29	25	24

disease; but the question of having the county laboratory depends on whether the relative value of such work in the control of disease is as important as field activities, in the expenditure of available funds. It is generally agreed that no health project can be made successful without enlisting and obtaining the interest and cooperation of the medical profession. But since after all, the real purpose of the county health department is to prevent and control disease and to inculcate habits of right living, the practicing physician should know and should appreciate the relative value of the different phases of health work in obtaining the best possible result for the money expended. This is the only business basis on which a health department can be directed.

With a view to throwing some light on this question, Tables 2 and 3 are given, showing the examinations made and the total expenditures for health work in each of the three counties, and indicating the proportional expense attached to the laboratory examinations for the years 1922 and 1923.

It will be seen that from 24 to 29 per cent. of the total cost was devoted to diagnostic work. Therefore, it appears that from a life conserving standpoint, the appropriation of money expended in these demonstrations is relatively higher than it should be in comparison with the importance of other health activities. It would seem unjustifiable to expend a considerable amount of money for laboratory maintenance, especially in the average county. It is, however, desirable that every county department of health make routine examinations for the detection of malaria, typhoid fever, tuberculosis and diphtheria, as well as examinations of feces for parasitic infestations, and examinations of milk and water.

In correctly interpreting the foregoing facts, I am inclined to believe that the best plan for a state laboratory service is to have a well organized central laboratory, with district laboratories equitably distributed over the state. This will doubtless offer the most economical and efficient service in providing a well appointed health program.

The underlying principle in the carrying on of a health program, whether it be the control of tuberculosis, the suppression of venereal disease, immunization against smallpox, typhoid or diphtheria, special demonstrations for the control of malaria, the promotion of maternal and infant hygiene, including medical examination of school children with provision for the correction of remediable defects, or the conducting of an intensive educational campaign for the prevention and control of disease and the raising of health standards, is to develop in the individual citizen a sense of personal responsibility for the care and protection of his own physical welfare as well as for the health of his family, and to develop in him a sacred regard for the rights of others in preventing the transmission of communicable diseases from one individual to another. At the same time, in the employment of methods for the advancement of hygiene and sanitation, the greatest care should be taken against creating the spirit of

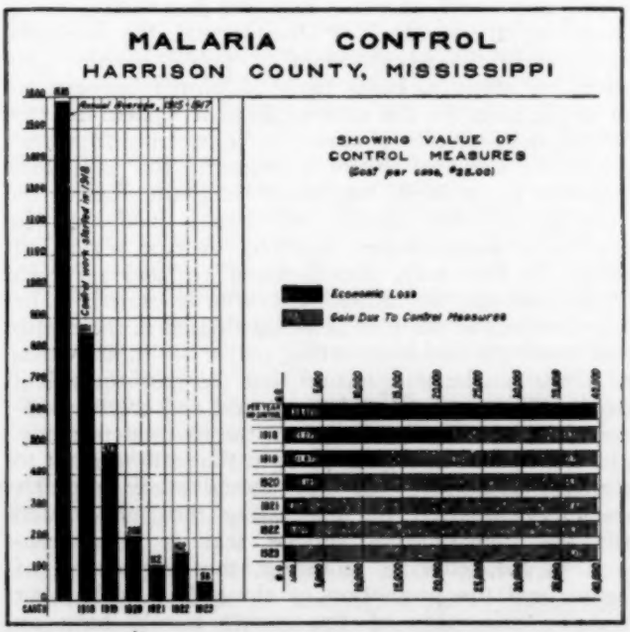

Chart 4.—Economic value of results from control measures as carried on by the full-time department of health of Harrison County, Miss. The chart indicates reduction of malaria including an estimate of economic loss from malaria per year prior to 1918, and the gain per year beginning with 1918 and thereafter. Each case of malaria is conservatively estimated to cost $25. The dark represents loss, and the shaded part of the chart the gain, during the years indicated.

paternalism among the masses. To this end, the interests and rights essential to the maintenance of the medical profession should be strictly guarded, as well as the observance of the ethical relationship which should prevail between patient and physician.

NECESSITY FOR PROPERLY EVALUATING RESULTS OBTAINED

There has been an enormous increase in appropriations for health work, comparatively speaking, since 1910, and, because of the increased expenditures, the public is assuming a more critical attitude toward the use of the public funds for the maintenance of health organizations. If any health project is to become successful, the public must be made to see that it is being directed on a business basis, and that the results attained more than compensate for the expenditure incurred. In the furtherance of county health departments, there will be an increasing need for a more reliable and definite system for the measurement of efficiency in the administration of health work. A number of methods have been suggested but, regardless of the plan, there are two items deserving special consideration, the cost and economic return on the investment made.

The cost of carrying on a health project can be easily determined, but measuring the economic returns even with reasonable accuracy, with the variable factors to be considered, is often exceedingly difficult. It is evident that the reduction of the total morbidity or mortality of a county or state can not be used as a reliable basis in measuring efficiency, although such data may be of definite value. The morbidity, and especially the mortality rates of specific diseases, is of much more use as an index of the value of methods used. However, a comparative study of death rates from various causes in age groups can be used most effectively when properly interpreted as a means of pointing out the lines of work which should be stressed and also as a basis for measuring the economic returns. There is urgent need of better trained vital statisticians to analyze properly statistics and give dependable advice concerning the control of disease and the methods employed in the advancement of public health. An interesting study is being made in North Carolina in the application of the cost equivalent system in the evaluation of results obtained in county health work. A scale of financial values is prepared for each item of work in a well organized program, based on a study of the results of health activities in relation to expenditures incurred over a period of years. In this way, the dividend realized on each expenditure can be rather satisfactorily stated. The suggestiveness of the plan is a contribution in the evaluation of results in administering public health activities, and there can be no question that the cost equivalent system will serve to stimulate interest and create confidence in the economic returns on the investment made.

In conclusion, if organized county health work is to be made permanent, not only should every available means be employed for impressing the public mind with the humanitarian service that is being rendered in the relief of suffering, the suppression of disease, and the promotion of the public health, but also, the citizenship of the county should have an intelligent conception of the results that are being obtained in terms of service rendered over a period of years. To this end, there is immediate need for the respective health authorities to devise and adopt a more uniform system for keeping accurate records, and making reports for use in scientific and comparative analytic study, for the purpose of determining more accurately the efficiency of the work on the basis of the appropriations made.

Conscious of the limitations that may exist in having any kind of rural health administration through county organization, I am convinced that this is the essentially fundamental step to be taken in improving rural health service as well as in achieving the desired ideal of bringing about a more complete integration of the medical profession and public health forces.

SUMMARY

1. Adequate appropriations are essential for central organizations in the state health system, but precaution should be taken to avoid a large overhead expense. To this end, only essential bureaus should be maintained by the state health department.

2. The fundamental need in the development of state organization is to provide adequately for proper medical care and a more efficient health service for the rural population. This can only be effectively accomplished through the establishment and maintenance of county health departments.

3. A state subsidy should be provided for stimulating and making permanent the organization of local health work.

4. The federal government and voluntary agencies should direct their attention to initiating and stabilizing local health administration.

5. The adjustment of the responsibility between the state and county health authorities can best be accomplished by the administration of a state subsidy in cooperation with the counties.

6. The county health officer should be a graduate and licensed physician, having a general knowledge of medicine such as is acquired in a reputable medical school, and possessing tact, energy, and the ability to apply his knowledge.

7. The full-time county health organization should have as a minimum personnel a medical health officer and a clerk-microscopist. The budget for the average county should consist of from $7,500 to $10,000 and it should be so arranged as to be flexible.

8. The program should be conducted on a business basis, and the public should be made to understand the economic value of the results obtained on the basis of the investment made. This can only be determined through a more uniform and accurate system of keeping records and making reports in the respective states, as a basis for comparative study in evaluating the results secured.

Radium Rays.—As a result of the work of Giesel, Becquerel and Villard, the alpha, beta and gamma rays of radium were separated. The alpha rays were found to be positively charged helium atoms shot out from the radium atom with a velocity of from 9,000 to 12,000 miles a second. They are not penetrating, and in fact, can be stopped by a single sheet of paper. Later Madame Curie was able to demonstrate that they were the principal source of the heat emitted by radium; "thus out of a total of 136 calories given off by a gram of radium in one hour, the alpha rays were responsible for 125 calories." The beta rays were shown to be similar to, or identical with, the cathode rays of a roentgen-ray tube; in other words, they are negatively charged particles (electrons) traveling at a high velocity and able to penetrate from 1 to 5 mm. of aluminum, depending on their speed. More recently their velocity has been measured and found to vary from 2 to 98 per cent. of the velocity of light. The gamma rays were shown to be nonelectrified radiations, corresponding to the roentgen rays, but more penetrating. Unlike the alpha and beta rays, they cannot be deflected by a magnet and are neither refracted nor reflected. They possess ionizing, photographic and fluorescent properties, but to a lesser degree than the alpha and beta rays, the proportion being, alpha rays 10,000 beta rays 100, and gamma rays.—Davis, K. S.: History of Radium, *Radiology* **2**:334 (May) 1924.

THE MENTAL AND NERVOUS SIDE OF ADDICTION TO NARCOTIC DRUGS

A NEUROPSYCHIATRIC PROBLEM *

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The conclusions reached in this paper are based on drug cases appearing in the routine of a general psychiatric practice. In number, the series embraces probably about the average percentage of such cases coming year by year to a neuropsychiatrist in an industrial community such as this. These patients were handled for the most part in the St. Francis and Western Pennsylvania hospitals. They were studied as psychiatric material, the history, environment and constitutional makeup being considered, as in the case of any other neuropsychiatric affection.

It is customary to discuss the results of morphin and other habit-forming drugs along with the results of metallic poisons such as lead, or of the endogenous toxins of uremia, diabetes, etc., under the general caption of the toxic psychoses. While it is true that the narcotic, or habit-forming drugs, and alcohol, do produce toxic psychoses, the effects brought about by them are essentially different from effects following on the metallic and endogenous poisons. Drug addiction can never be understood, or successfully handled, until this fundamental difference between the action of the habit-forming drugs and that of other poisons and disease processes is appreciated: The metallic and endogenous poisons produce their destructive effects, in the main, more obviously on the physical organism; these effects are generally demonstrable, and understood. The mental effects are secondary. The narcotic, or habit-forming, drugs, on the other hand, produce degenerative effects primarily on the mind and character; these arise early, and are more or less permanent. The effects on the physical organism in the case of narcotic drugs are largely functional, and generally eradicable.

HABIT-FORMING AND NON-HABIT-FORMING POISONS

Alcohol, in its results, partakes of the nature of both the habit-forming and the non-habit-forming poisons mentioned. This discussion, however, is concerned only with so-called narcotic, or habit-forming drugs. It is based particularly on the symptomatology observed typically in users of opium and its derivatives. When we apply the term habit-forming, we thereby definitely set these drugs as causative disease agencies apart from any other toxins or infections. It is superfluous to call attention to the fact that a person suffering from lead poisoning or uremia does not acquire a desire for the continuance of the effects of the toxin; it is only through the use of the habit-forming drugs that such a desire or mental state is brought about. I wish to emphasize the fact that this mental or habit-forming phase of the disease puts the narcotic drug addict in a group separate from that embracing persons affected by metallic, gaseous and other non-habit-forming poisons. (I would suggest as a convenient term of classification of the syndrome incident on the use of these drugs the heading of narcotoxic psychosis, as combining both the narcotic and the toxic features characteristic of the condition.)

The narcotic and the non-narcotic poisons have in common the production of a depleted nervous system. This depletion expresses itself in both instances in various combinations of hysterical, neurasthenic and anxiety states, depending on the constitutional make-up of the individual, and on the ravages of the particular poison. But the victim of a narcotic drug acquires, in addition to this common derangement of the nervous system, a peculiar mental condition that does not come to pass in the victim of the non-habit-forming agents, and which makes of the narcotic victim, as has been said, an entirely different therapeutic problem.

TOBACCO USING AS A SIMPLE ANALOGY

Most of us can bring home to ourselves in a mild degree what happens to the mental and emotional processes in the case of serious drug addiction by trying suddenly to break off our tobacco habit. A brief digression inquiring into the psychology of our lightly held addiction—the use of tobacco—may by analogy facilitate the understanding of the similar mechanisms involved in a habit which is virtually enslaving. When the use of tobacco is begun, the organism, as a general thing, presents a toxic reaction. Many of us can recall the vasomotor upheaval; sweating, dizziness, the revulsion in the digestive organs, the nausea and vomiting. These are all reactions activated through the vegetative nervous system, familiarly spoken of as the sympathetic. Sooner or later, the antagonism to nicotin is overcome, and a pleasurable adaptation to tobacco is established. The habit is maintained by various factors operating through both psychic and sensory channels. On the sensory side, taste, sight and smell tend to perpetuate the use of tobacco. Psychically, there is the feeling of relaxation, and lessening of nerve tension. (Nicotin depresses the synaptic neuron connections; thus is explained largely the lessening of nerve tension.) In certain persons, digestion seems to be aided by tobacco after meals. Asthmatic attacks may yield to its relaxing influences. Through the various pleasurable experiences, there is built up a memory-associative constellation which makes for the perpetuation of tobacco using. Any of the components of the memory association alone, or in combination, can arouse the desire for the smoke or chew. If this desire is not satisfied, a discomfort, or tension, is set up in the organism, which, in a measure, is analogous to what we term the "craving" in the morphinist. The user of tobacco remembers that his cigar has brought a feeling of comfort and contentment in a time of overwork or anxiety; therefore his associative memory mechanism drives him to the sedative he has known, his tobacco—again analogous, in minor degree, to the refuge the morphinist finds in his drug, and to the urge that drives him to relapse.

PHYSICAL DAMAGE IN DRUG ADDICTS

In whatever type of toxicity, metallic, endogenous, narcotic, etc., the obvious and necessary step is to correct, so far as possible, the damage to the physical organism. This correction of the physical condition constitutes, as a rule, practical restoration, or cure, in the case of non-habit-forming toxic injury, reaching, as it does, the essential source of the trouble. But in the case of the habit-forming drug, physical restoration is but the first step toward rehabilitation, or so-called "cure"; there still remains the mental damage, which constitutes the true dominant therapeutic problem.

Narcotic drugs are used, therapeutically, for the alleviation of conditions affecting the nervous system:

* Read before the Section on Nervous and Mental Diseases at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

the relief of pain or of mental or emotional distress. We naturally, therefore, find their effects, when reaching a pathologic degree, on the nerve organism. In explanation of this pathologic result, it is well, first, to remind ourselves of the elementary fact that we feel and act in accordance with the information that we receive through our sensory nervous system: our special senses of sight, hearing, body surface sensibilities, etc., with all their highly elaborated end-organs. These, through their sensory connections with the brain, keep us constantly informed as to our environment. Under a similar nerve mechanism, we are kept informed as to the status of our own bodies, and personal identity, through the sensory impressions received from nerve terminals, or receptors, distributed in muscles, joints and viscera. Nature has provided no other mechanism by which the organism can inform itself as to its environmental condition or bodily states. In short, the human organism has to depend for self-preservation on this intricate nerve mechanism.

When this great informing sensory system is in a state of health, or physiologic integrity, the person's information as to his environment and bodily functioning is not interfered with or distorted. But feeling, thinking and conduct will be distorted from what is normal for a particular person as his state of nervous integration varies from his normal. When environment becomes hazardous, it is through this nervous apparatus that the brain receives the information, and the individual is enabled to fight or to flee. If there is somatic pain or trauma, it is still through this nerve channel that knowledge is received and the person can carry out appropriate action for relief. On the other hand, if this great discriminating nervous mechanism for receiving and transmitting information is impaired by disease or injury, so that its function is interfered with, the person's information as to environment or bodily condition is by just so much distorted. His feeling, his thinking and his conduct will to that extent deviate from his general plane of normality. In disease processes generally, and in states of toxicity, such, for instance, as pneumonia, this deviation from normal thinking and feeling is usually temporary, and disappears when the patient returns to his former state of physiologic integrity. But when the organism has accustomed itself to the toxicity of narcotic drugs, a mental deviation has been induced which continues to influence feeling and thinking even after the narcotic poison has been eliminated.

Bodily Tonicity.—In a state of normal health, a general sense of well-being prevails. This sense of well-being is a result of the sum total of all sensory impressions reaching the brain; it is made up of the continuous flow of sensations from all the organs of the body to the mind. This flow of sensations we term the general bodily cenesthesia. Unless disease interferes, the person is not aware of or disturbed by this cenesthetic functioning. Tilney and Riley[1] write: "Maintenance of this sense of well-being depends upon adequate contributions from all types of sensibility in the body. Disturbances in this sense may be occasioned by inadequate, excessive or improper stimulation received through any of the avenues of special or somesthetic sensibility." This cenesthesia constitutes the source from which arise the incentives of behavior. In other words, conduct is the end-result of this underlying bodily tone or state of feeling. Under the influence of a narcotic drug, there is an obtunding of the general cenesthetic sense, along with the dulling of any specific pain for which the drug may be used. If this obtunding is continued for some length of time, there is a lowering of tonicity of the general cenesthetic machinery, so that even the customary functioning of bodily processes cannot eventually proceed without inducing a sense of discomfort when obtunding ceases. There is general lowering of the person's capacity for withstanding pain or distress; he must continue obtunding his general sensibility in his effort to maintain a tolerable sense of well-being. This necessity, and instinctive effort on the part of the human organism to maintain itself in a bearable state of being, lies at the basis of addiction; it determines the psychology and behavior of the drug victim.

Sympathetic System.—Considering more specifically the effects of an opiate on the physical organism, with the accompanying mental and character changes, we find it acting conspicuously on the vegetative, or involuntary, nervous system, with its endocrine extensions, the whole loosely termed at times the sympathetic system. This system, as we know, controls involuntary, or automatic, processes: cardiovascular, respiratory, digestive, secretory, etc., as well as ductless gland functions with their important biochemical relations to the organism. The cardiovascular system in an habitué soon adjusts itself to the support of an opiate. Morphin is a powerful and enduring stimulant of this system. As to the effect of prolonged stimulation, if the organism is supplied needlessly with something that supplants its own effort in any particular direction, it ceases to function in proportion to the substitution; in the morphinist, the support that the drug has imposed becomes evident, on withdrawal, through the tachycardia, sweating, etc., intervening, all indicative of some degree of circulatory collapse, at times fatal. This collapse, or effort syndrome, explains the cardiac distress and pain of withdrawal, and also explains much of the anxiety and feeling of dissolution and panic arising during the withdrawal stage. For these psychic manifestations of anxiety, etc., are constant accompaniments of heart embarrassment whatever the etiologic background—angina pectoris, heart flutter or acute indigestion. These symptoms are a result essentially of dysfunction of the nerve supply to the heart from the vagus, the great upper autonomic representative of the vegetative nervous system.

Gastro-Intestinal Changes.—The digestive apparatus also is controlled by the vegetative nervous system. Here, in the addict, the organism adjusts itself to the obtunding changes imposed on the secretory and smooth muscle fiber nerve mechanisms by the drug; when the drug is suddenly removed, this pathologic adjustment is reversed, and there is a violent disturbance of integration in secretory and muscle functioning, evidenced in cramps, diarrhea, vomiting and general abdominal distress. Under the drug, constipation is almost universal in the morphinist; on withdrawal, an irritation is produced by the sudden exposure of the drug-obtunded neurosecretory mechanism to the demands of former normal functioning. A temporary overactivity is brought about, resulting in diarrhea. While the drug was being used, a pathologic adjustment could go on without awareness of abnormal processes, because of the narcotizing of the sympathetic receptors in the digestive canal. Such symptoms referable to the

1. Tilney and Riley: "The Form and Functions of the Central Nervous System," p. 560.

digestive apparatus evidence further the apparently selective action of opiates on vegetative processes. In this case, both splanchnic and vagal components are involved.

Changes in Reproductive Organs.—The functions of the reproductive organs, innervated mainly by the autonomic division of the vegetative system, present well defined disturbances as a result of opium and its derivatives. Striking changes in both the physiologic and the psychic functions of sex come about. Cessation of menstruation occurs in the female, with atrophy and cessation of function of the mammae. Psychically, this is accompanied by more or less complete loss of all sexual desire, and of the emotions associated with sex. In the male, in advanced cases of morphinism, complete sexual impotence is frequently seen. Both sexes, in extreme addiction, are practically rendered emotionally asexual. On withdrawal of the drug, the individual is often overwhelmed by tumultuous sex desire. One of my patients, J. N., a woman, aged 35, of exceptional refinement, married, with several children, on the third day after being off her morphin, insisted on leaving the hospital. Hitherto, she had been cooperative and unemotional. Finally, she revealed the fact that she was so overwhelmed with desire that she was afraid of making advances to men about the place. It is a frequent occurrence for male addicts to be greatly concerned over seminal losses, and sexual erethism, at the end of withdrawal.

Such additional involuntary phenomena as yawning and sneezing occurring in withdrawal indicate involvement of the intricate autonomic mechanism brought into overactivity by the release of afferent nerves and receptors from the obtunding effect of the drug. Insomnia is practically universal after withdrawal. The physiologic phenomenon of sleep is a vagotonic condition according to Bauer. The autonomic mechanism controlling this recurring physiologic condition has been disorganized under the influence of the drug. The insomnia is incident on the difficulty of the reestablishment of the normal cycle of wakefulness and sleep, according to Higier.[2]

MENTAL AND EMOTIONAL PATHOLOGIC CHANGES

When the physiologic functions of the sexual realm are so interfered with, it is not surprising that mental and emotional distortions should occur. The instinct of sex probably constitutes the chief source of our emotional life and personal conduct. The morphinist becomes indifferent, varying, in accordance with his original character make-up, toward ordinary family ties and obligations. There is a disappearance of those incentives grouping themselves about the family unit—ambitions of acquisition, desire for security against poverty. He becomes improvident and heedless of social esteem. Such character alteration seems to be definitely correlatable with physiologic changes in the realm of sex.

We may remind ourselves that malfunction in members of the endocrine system, other than those of sex, produces mental and emotional pathologic changes. We have all seen the personality alterations attendant on myxedema, in which the thyroid gland is involved—the emotional dulness and mental defect, and the opposite alterations in hyperthyroidism; the mental sluggishness of acromegaly with its disturbed pituitary gland; the depression of Addison's disease with its basis of dysadrenalism. Such phenomena indicate the close relationship that exists between normal development and maintenance of personality, and balanced activity of the vegetative endocrine system.

I have called attention to the dependence of the organism for its knowledge of environment and personal identity on the functioning of the general sensory nervous system. This applies both to the voluntary system, the sensorimotor, or cerebrospinal, and to the involuntary or vegetative system; the former putting us in touch with the external world; the latter informing us as to bodily states and personal identity. It has been pointed out that it is through the sensory associations, both somatic and psychic, implanted in the organism, that a habit is built up and maintained. Tobacco was cited to illustrate the manner in which even a benign habit may take hold of a person. In this instance there was noted implication of the vegetative system of relatively insignificant character (the pleasurable sensations, etc.); insignificant because the associative-memory factors and conative states laid down remain largely within the control of volition, in the realm of insight, and outside the domination of automatic impulsion. A habit like tobacco using which does not seriously invade the involuntary nervous system is of benign character; it is when the involuntary, or vegetative, system is seriously invaded, placing the individual more or less outside the realm of volition and insight, that the habit becomes, as it were, malignant, and that serious, it may be ineradicable, alterations take place in the personality.

While the organism as a whole functions as an integrated unit, there is an essential difference in the contributions furnished by the two great divisions of the nervous system. A man came under my observation recently with complete severance of the cord in the cervical region, and with total paralysis of all extremities. He lived for six weeks, with nutrition carried on by an efficient digestive system; the respiration, circulation and secretory functions continued good. His death was due to septicemia incident to bedsores. This case furnishes a practical illustration of the relative independence of function in the cerebrospinal and vegetative nervous systems. The involuntary automatic activities, essential to life, under domination of the vegetative system were successfully carried on. The patient maintained his mental capacity and emotional tone; in other words, his personality remained intact, although his voluntary, or cerebrospinal, system was almost completely in abeyance. I cite this case to emphasize again the interrelationship existing between personality make-up and the integrity of the vegetative nervous system, and that it is to the inroads made on the integrity of this system by narcotic drugs that the personality alterations in addiction are essentially due.

COMPENSATING INCREASE IN AMOUNT OF DRUGS

In the addict, the mental and character deviations take on a particular coloring, varying with the original constitutional character make-up of the individual, and the relative sensitiveness of the different parts of his vegetative apparatus to the drug. Certain of these deviations can be definitely correlated with alterations in function of particular vegetative activities—as observed in connection with the physiologic changes in the realm of sex due to the drug. In general, the addict becomes timid, fearful, secretive and asocial. Just as the cardiovascular system in an habitué adjusts itself to the physiologic support of an opiate, so in the character

2. Higier, Heinrich: **Vegetative Neurology**, p. 71.

realm the habitué adjusts himself psychically to the support of his drug; he finds in it an agent that artificially fortifies him for meeting pain or difficulties. In order to maintain his so-called drug balance, or state of satisfaction, he must continually increase his supporting drug. He is playing a losing game by the necessity of compensating artificially against the weakening of character that inevitably results from the removal of the necessity of meeting obligations and exigencies through the discipline of effort. The normal appetites and hungers by which the organism makes known its needs are to a degree neutralized. The cycles of hunger and appeasement, of wakefulness and sleep, of work and rest, are broken in their normal sequence, and cease to guide the individual along self-preservative lines. He may be chronically exhausted, but realization of the fact may be shut off, and therefore unheeded.

The drug has the effect of lulling the victim into a sense of security out of keeping with obvious facts of reality. His conduct is determined by these false convictions; the future holds no menace, yet the sheriff may be at his door; he plans confidently for impossible undertakings, though in imminent danger of death from some obvious organic disease. Because of these false convictions, which have gradually and insidiously established themselves in the addict's mind, he often acquires the belief, amounting to a delusional idea, that the drug must be good for him. (In some persons, these beliefs and convictions are of slow growth—over years; in others, the altered personality becomes rapidly established.) All this disruption of the processes of thought, and of the vegetative functions that underlie emotional and instinctive reactions constituting the essence of personality, cannot long continue without the fairly permanent establishment of a psychopathologic status. At times, the alteration of personality and judgment becomes so fixed that insight cannot be reestablished, and return to the drug will be inevitable, except under restraint.

RELAPSE; THE ZERO POINT IN RESISTANCE

The psychopathologic status has been built up out of the sensory and psychic memory-associations coming about through altered neuron reactions incident to the drug. It has been a path of least resistance. The memory-associations have become action-patterns not only determining behavior during the period of addiction, but remaining in consciousness during freedom from the drug to become dynamic in times of stress, impelling the individual back into his comfortable habit-path, long after he has been off his drug. Though organic maladjustment may be put right, the associative memory component cannot be obliterated, and in times of sufficient mental anxiety, or of fatigue or pain, these memory processes will be touched off, and will drive the addict to the one sure panacea he has known. This resort to the drug has become in effect an instinctive reaction. A patient, R. T., a highly intelligent business man, had been off the drug for six months, and was apparently in excellent health. At a time when fatigued by overwork and business worries, he was called suddenly to a distance, where his only son had met with a fatal accident. He was suddenly seized with violent pains in his joints, "as if squeezed in a vise;" he became nauseated and panicky; with great abdominal and general distress. His symptoms were so like those he had experienced during his three withdrawal periods from morphin that he thought the drug must have been secretly administered to him. Under the stimulus of bodily fatigue and psychic distress, the associative-memory mechanism recalling the relief and support of the drug in former unbearable situations was touched off, driving him to his accustomed refuge under such circumstances. The dead level, or zero point of resistance in this person had been reached, beyond which normal adjustment breaks down. A psychopathologic basis has been created in such cases similar to that existing in the hysteric; imperative need for the drug arises under conditions comparable to those under which symptoms of hysteria arise in the person who shifts to the hysterical mode of reaction when normal adjustment seems impossible.

A NEUROPSYCHIATRIC PROBLEM

The observation of a routine series of approximately 1,500 narcotic drug addicts, many of whom were persons of superior intelligence, convinces me that this is essentially a neuropsychiatric problem. The greater number of habitués have drifted into narcotism because of inherent mental instability; the majority of all addicts have become victims during adolescence, before character, even in normal youth, could become stabilized. A small minority have succumbed through therapeutic necessity. The acquiring of the habit is only in rare instances a matter of individual responsibility. Such facts, viewed in connection with the deep-seated and intricate invasion of the personality by the drug, make it clear that decisions as to curability, and as to treatment are for the physician. Drug addiction is at present an outstanding social problem. It is only through scientific and unprejudiced understanding of the matter that society can be protected against this insidious menace, with its increasing army of inadequates and their train of poverty and crime. Society will have to approach this problem in the end as other disease problems have been approached; we eliminate typhoid, not by putting responsibility up to the individual, but by abolishing the source of infection. Drug infection, as well, will have to be attacked at its source, whether that source lies in the greed of individuals or in that of governments.

SUMMARY

Habit-forming drugs produce different and more complicated pathologic changes than those produced by other toxins and infectious agents.

Morphin produces its most serious effects through its action on the vegetative nervous system.[3]

Habit-forming drugs induce a distortion of normal reflex activities in both sensory and psychic spheres.

The substitution of a psychopathic status is maintained by increasing the obtunding drug to offset the ever decreasing compensatory efforts of the organism.

Because of the overwhelming dependence of instinctive and emotional life on visceral and endocrine functioning, instinctive and character deviations follow prolonged disturbance of their activities with more or less permanent changes resulting in the entire personality. This mechanism, I believe, is the essential lesion in narcotic addictions.

The theory here suggested supplies a basis for the understanding of narcotism on which the entire symptomatology can be adequately explained.

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3. The detailed action of morphin on the vegetative system is described by Kraus, W. M.: Morphine and the Vegetative Nervous System, J. Nerv. & Ment. Dis. 48: 36 (July) 1918.

ABSTRACT OF DISCUSSION

DR. MEYER SOLOMON, Chicago: In the psychoneuroses and in related behavior conditions, one of which is drug addiction, my view is in harmony with that of Dr. Wholey. In these conditions we have a personality problem, in which the patient is in a state of nervous and mental tension, unrest and excitability. I have often referred to it as a state of nervous and mental disequilibrium. The French have written much on this subject. The great struggle in these conditions is to regain poise or equilibrium, and to accomplish this the patient will seek various ways and means, some of them helpful and normal, and others harmful and abnormal. One of the pathologic ways is drug addiction. Therefore the problem in each case is, Why has the person who has resorted to drug addiction developed this particular state of unrest, tension, and lack of equilibrium? It may be due to external influences, internal mental conflicts, bodily conditions, either functional or organic disease, and other causes. The problem is to gain poise. "Personality study" is the fundamental thing. Therapeusis should include care of the body, elimination of the drug, and proper ways of personality handling, which the patient eventually must gain and carry out for himself. To handle the question in any other way seems to me to be analogous to dealing with the fruit at the end of the branches of the tree rather than with the trunk and with the roots.

DR. LYDIA L. POAGE, Cincinnati: What has been the author's experience with these psychotic personalities in barbital (veronal) addiction? I have been in mental work in a local hospital for six years and have had several barbital addicts, with various psychotic personalities. What is the basis of this particular addiction? Why is it such a wrecking drug when it is supposed to be only a hypnotic agent?

DR. WALTER H. CONLEY, New York: In the Middle West, morphin is most commonly used by drug addicts. In our section we have an entirely different subject to handle, as heroin is used by the majority of them. Heroin users are not secretive as are morphin addicts; they get together in crowds and gangs. One boy will began to take it, and through his influence there will be ten or twelve boys taking it. I asked one boy, whom I have had in the hospital five different times, why he took the treatment and why he began the use of the drug again. His answer revealed a peculiar psychosis: "I take the treatment to get off the drug in order to have the sensation of beginning again." He had a peculiar mental condition which led him to want to begin over again and get the feeling that these addicts originally experience then, but not after they become addicted. When they become addicts, they take four or five times as much as they need to keep under the drug. On bringing them into the hospital, in those cases in which from 30 to 40 grains of heroin has been taken, one can give them 5 or 6 grains of morphin spread over several hours, and that will make them comfortable. From that, one can reduce the dose and in three or four weeks get them off the drug. But our trouble in heroin addiction is that the boys buy it on the street from pedlers; they do not get it from the physician. In the case of morphin addiction, the victim forms the habit through taking the drug for an operation or for some physical condition. We have had 4,000 cases of boys in the Metropolitan Hospital, some repeaters, and they all give the same history. They will exhibit a peculiar psychosis. They are in gangs, they are full of braggadocio, they commit crime while in this condition, and they do many other things that the ordinary morphin addict would not do, because the latter are secretive, remain by themselves, and do not allow others to see them take the drug. The heroin addict wants other people to know that he takes the drug.

DR. JOSEPHINE A. JACKSON, Pasadena, Calif.: The subject of this paper is basic. It concerns the personality of the patient in order to determine what he is suffering from, to see why he lacks the sense of well being, which defect leads him to take the drug. If we would carefully investigate the cause of his becoming a drug addict, we could better relieve the symptoms. One man, a college graduate of good social and family habits, had a serious inferiority complex, which he did not recognize, and became a dipsomaniac. When he consulted me for dipsomania, he said, "I wouldn't mind if I drank from conviviality, but I am a beast inside. I go to a hotel, retire by myself, and then get beastly drunk." I was able to show him the basis of his lack of sense of well being, causing him to approach the relief of that lack of sense of well being from an intellectual rather than from a physical standpoint. If we would but know that we can all be a guider of the machine instead of being controlled by that machine, we could help in this matter of drug addiction.

DR. S. A. DUNHAM, Buffalo: To cure a morphin addict, it is all right to attempt to develop his personality; but I have come to the conclusion that, as drug addicts are always psychoneurotic, we must have legal detention in addition. The ordinary addict gives one only two or three weeks in which to cure him. One gets him off the drug, but he is psychoneurotic and may have a real psychosis, and that is why he relapses. Eventually one will get back to legal detention on account of the unreliability of the addict. Drug addicts form a class by themselves. They cannot be classified with the alcoholic; the alcoholic would not associate with the drug addict. A woman with a good personality, the wife of a physician, with good people around her, had Christian science treatment. I am not saying anything against Christian science, but here is where the personality comes in: For a year this woman was under the treatment of Christian scientists for drug addiction; she was getting thin all the while, eating very little. They thought that she was cured of this addiction; but when she became so thin that she was likely to die they sent her to a sanatorium, and when they moved her out of the house they found three hypodermic syringes and quite a bit of the drug. Unreliability! An addict may be given clothing, placed in a room, taken care of and got off the drug; the next day the patient is gone. These patients cannot be depended on.

DR. C. C. WHOLEY, Pittsburgh: In presenting this paper, the object I had in view was a discussion of the psychology underlying addiction to narcotic drugs. It is my belief that, when this phase of the subject is better understood, the matter of therapy will be more rational and effective. With regard to the question of the symptoms following barbital addiction, they are in many respects, as far as the psychic involvement is concerned, very similar to what we find in other narcotic drugs, though less serious perhaps than those following opium and its derivatives. There are individual, physical and psychic pecularities of action of the different narcotic drugs; but the underlying mechanisms associated with the habit side are essentially the same, differing only in degree of psychic morbidity. This, I think, will also answer the question of Dr. Conley regarding heroin. I did not touch on the interesting association of the psychoneuroses with narcotic addictions. When addiction has been turned to as a protection against some overwhelming incapacity for adaptation, the problem is, of course, more involved than when an average normal individual has become enmeshed in the difficulties incident to narcotic addiction. Any so-called three day "cure" is pernicious; and such anomalous therapeutic agencies exist because of the general lack of knowledge regarding the psychology and therapy of narcotic drug addictions.

Use of Chaulmoogrates and Morrhuates in Tuberculosis.—It is of interest to note, that while chaulmoogra oil derivatives have proved of great value in the treatment of leprosy, the morrhuates in small subcutaneous doses have proved both safer and more effective in tuberculous disease; confirming in a remarkable manner the century-old empiric opinions regarding both oils just as our two great specifics for tropical disease are derived from cinchona bark and ipecacuanha root discovered by the aboriginal Indians of South America. Medical science has vastly improved on the old empiric methods by furnishing soluble compounds of the active alkaloids quinin and emetin, the latter of which was, however, known to science nearly a century ago, before I was so fortunate as to establish its great value in amebic disease. Similarly, my Calcutta investigations have demonstrated the value of the application of the same principle in obtaining the active portions of chaulmoogra oil in forms suitable for injection in leprosy and those of cod liver oil in tuberculosis.—Rogers, Leonard: Fourth Croonian Lecture, *Lancet* **1**:1297 (June 28) 1924.

THE MEDICAL TREATMENT OF CHRONIC ULCERATIVE COLITIS (NONSPECIFIC) *

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In discussing the treatment of the nonspecific form of chronic ulcerative colitis, it is essential primarily to emphasize the fact that these remarks do not cover or include the therapy of specific types of chronic colitis, such as amebic or dysenteric colitis, either of which is more successfully combated with more specific drugs or with a specific antidysenteric serum. Nor is the subject of mucomembranous or mucous colitis included within the limits of this discussion, for the origin and nature of the latter differs essentially in all its details from the type of ulcerative inflammation under consideration.

This discussion of the treatment of colitis is based on experiences with twenty-nine cases, observed during the years 1921, 1922 and 1923.

The medical treatment of chronic ulcerative colitis has in the past been rather haphazard. This is said in no spirit of criticism of our predecessors, nor in a manner in any way to deprecate the efforts of the many able clinicians who have met their Waterloo in attempts successfully to terminate this grave malady. The high percentage of mortality (Yeomans' [1] series, 5.5 per cent.; Lynch and Felsen's,[2] 12.2 per cent.; Albu's,[3] 14.2 per cent.) is an evidence of the seriousness and persistence of the disease. Nor do these figures really tell the whole tale regarding the death incidence. The human limitations of the personal follow-up of any one individual's term of clinical activity make it likely that many of the patients reported as "improved" or "cured" may still be the victims of a later severe recurrence of the malady, with a possible fatal outcome.

There has been but little unanimity of opinion on the best method of diet restriction. Some authors have emphasized milk as the sole item of nourishment; others have just as carefully avoided milk and milk derivatives, and have prescribed a diet based on cereals and meat juices. All authors have emphasized the necessity of a cellulose-free diet, with marked restriction of green vegetables and of all fruits. Bed rest is unanimously approved.

In the way of medication, probably no other disease is as blessed with healing drugs. Every form of astringent and adstringent has been prescribed and is warmly recommended. The main reliance has been placed on the oral administration of the metallic astringents, namely, bismuth and its derivatives and silver preparations, and on the vegetable extractives of which tannic acid, tannigen, tannalbin, etc., form the bases. Courses of treatment with calomel and with ipecac have their ardent supporters; also bolus alba and kaolin have been advocated.

Locally, the drugs advised as astringent washes in the form of colonic irrigations have been legion. These include boric acid, sodium permanganate, salicylic acid, aluminum acetate solution, tannic acid, silver salts of all varieties, zinc sulphate, a sulpho-ichthyolate preparation, quinin, chamomile and, more recently, iodin preparations. Most of the preparations are recommended for use by anus or through an appendicostomy or cecal fistula. Many, if not all, of these drugs will, in chronic cases, give good results, some only temporarily, some more permanently. A certain, probably very small, percentage of cases lead to spontaneous cure, a far larger proportion to cure in the hands of experienced clinicians. Yeomans reports as cured or markedly improved thirty-two out of fifty-four cases observed (59.3 per cent.), leaving 40.7 per cent. of patients either fairly improved, unimproved or dead. Lynch and Felsen reported as cured or improved twenty-six out of forty-one patients (63.4 per cent.), leaving 36.6 per cent as unimproved or dead. It is the latter figures representing failures of treatment (roughly, from 30 to 40 per cent.) that surround this baneful disease with a dolorous atmosphere of futile endeavor and with earnest, though unsuccessful, attempts to cure.

Yet the percentage of cure and of marked alleviation of symptoms is sufficiently encouraging to warrant our closest attention and study, and no rational form of therapy is too trivial to deprive it of a fair and impartial trial. Particularly in the field of the newer chemical antiseptics is the greatest hope to be seen, a field which the late war, with its problem of the local treatment of infected and gangrenous wounds, has done much to stimulate.

REST

Bed rest is essential to the treatment of all the acute forms of the disease; it is also absolutely required in all chronic cases in which there is a recrudescence of symptoms, as well as of chronic active types of the malady. It is to be preferred, but is not absolutely indicated, in the healing stages of the milder forms and in the types of chronic carriers of the disease in which the symptoms are inactive or regressive.

Heat in the form of abdominal stupes, electric pads, etc., give great relief for the abdominal pain and for the attacks of gas colic that accompany quite regularly all of the active stages. Baking, applied to the abdomen, in the form of electric light apparatus at high temperature often gives great local relief and seems to exert, in some cases, a generally beneficent influence on the course of the disease. Hydrotherapy in the form of cold water applications has been tried without success. Logan [4] recommends very warm colonic irrigations with tap water, the temperature of the irrigating fluid being raised to 120 F.

DIET

In our hands we have failed to see any great therapeutic success result from attempts markedly to restrict food intake. To limit the diet to vegetable soups, cereal gruels, meat broths and similar single articles or single classes of foodstuffs does not lead to any convincing amelioration of the intestinal symptoms. In fact, on two occasions we have observed, on such diets, the occurrence of conjunctival and corneal inflammations similar in nature to the xerophthalmia that results from a deficiency of fat-soluble vitamin A in the dietary regimen. The incidence of such ocular and parocular changes has been noted in colitis by

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* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Yeomans, F. C.: Chronic Ulcerative Colitis, J. A. M. A. **77**: 2043 (Dec. 24) 1921.
2. Lynch and Felsen: Monograph, 1924.
3. Albu: Mitt. a. d. Grenzgeb. d. Med. u. Chir. **28**: 386, 1914.
4. Logan, A. H.: Northwest. Med. **18**: 1-9, 1916.

Graham [5] and by Crosse and Delord,[6] the lesion being described as a nonbacterial conjunctivitis complicated by a corneal ulceration and even by iritis. In our two cases, all therapeutic measures directed locally to the eyes failed to ameliorate the condition. A change of diet, however, to a general diet resulted in an immediate clearing up of the phenomena. The lesion is practically identical with that produced experimentally in the eyes of rats by Yudkin and Lambert.[7] By feeding these laboratory animals a diet completely deficient in fat-soluble vitamin-containing foodstuffs, they produced in about three weeks the same ocular phenomena as we saw in our colitis cases. The condition is analogous in its features with clinical xerophthalmia as seen during the late war in the starving countries of central Europe, and in the famine areas of India in previous years. The prompt therapeutic success on change of diet confirms our impression that the lesion was in the nature of an avitaminosis.

In very recent years, the occurrence of arthritis with or without conjunctivitis has been emphasized as a complication of epidemic dysentery. Both the arthritis and the conjunctivitis, as well as occasional cases of iridocyclitis, have been noted to occur in amebic dysentery, and occasionally also in nonspecific ulcerative colitis. It is suggestive that the eye phenomena coincide in point of time with the period necessary to produce, in laboratory animals, experimental xerophthalmia or keratomalacia. The disappearance of the inflammatory ocular changes on institution of a general diet is further suggestive of the deficiency origin of this complication.

Two main ideas dominate the choice of diet; namely, the avoidance of cellulose-bearing fruits and vegetables that encourage intestinal activity, and the omission from the food of such articles as may give rise to intestinal flatulence. As a rule, one sees no disadvantage from a general rather full diet. From this regimen it is necessary to withdraw raw fruits and green vegetables with high cellulose content, particularly the skin and core of fruits, though allowing puréed vegetables and stewed fruits. Orange juice and lemon juice in small quantities are not contraindicated, and are even beneficial in most cases.

On the other hand, the "gas pains" of colitis call for constant attention; next to the diarrhea they give the greatest amount of discomfort. To this end we have found it desirable to reduce the intake of milk, milk in many persons giving rise to intestinal flatulence. Similarly, one restricts the intake of excessive amounts of carbohydrate in the form of starchy tubers (potato, squash), of fresh bread and of cereals. The necessity of restricting carbohydrates has been emphasized by the late Adolf Schmidt;[8] he aimed particularly to exclude the more poorly digested vegetable starches.

It will be found that the individual pecularities of the patient must be taken largely into account in prescribing a diet for colitis. Changes in the food must be made in accordance with the personal factors of the patient under treatment.

To reiterate, a general diet containing all the food factors as well as the vitamin-containing substances is essential. Some milk unheated is always desirable, because it is the ideal food; in case of marked tympanites, excessive quantities of milk as well as of carbohydrates, sugars and starches must be eliminated.

Our personal experience with acidophilus milk is too limited to allow the declaration of opinion as to its therapeutic advantages. In this particular type of grave colitis we have not been able to administer sufficient fermented milk, whether of acidophilus milk or other marketable form, to convince us that a beneficial result was obtained without giving rise to so much flatulence and tympanites as to call for its discontinuance.

HYDROTHERAPY AND PHYSICAL THERAPY

The application of heat in the form of abdominal moist stupes or of hot packs, and occasionally also the trial of cold packs has been attempted. The moist heat gives some immediate relief, particularly for the pains of abdominal tympanites. Baking, in the form of electric light appliances directed over the course of the colon, has also been attempted. These methods may all give some semblance of symptomatic relief, though as a sole therapeutic means of combating ulcerative colitis they fall far short of the desired effects.

ORAL MEDICATION

A great variety of drugs has been given by mouth, the main reliances in the past having been placed on bismuth salts, tannic acid compounds, kaolin and its substitutes and, most important of all, the opium derivatives. All these medicaments have a distinct use in the treatment of this disease; they are used for a symptomatic, not a specific, effect. Large doses of bismuth subcarbonate (a teaspoonful every two hours) or kaolin or bolus alba or fullers' earth often cause an amelioration of the diarrhea, with relief from the constant urge to go to stool. However, for this purpose, opium by mouth or by suppository is best fitted, and is often indicated in small doses. With all these drugs, particularly the last mentioned, there is one difficulty. When one checks, too suddenly, the diarrhea, undesirable gas pains and tympanites arise so that the patient often prefers the urgency of the frequent movements rather than suffer the discomforts of abdominal colic. As a sedative to intestinal hyperperistalsis, opium is the drug of choice and, when used in small doses (tincture of deodorized opium, 3 minims [0.2 c.c.] every two or three hours) it diminishes without entirely halting the intestinal motility and thus avoids the undesirable by-effect of "gas" pains. Logan [9] has recently reported the cure of three cases treated by means of the administration of 10 minims (0.6 c.c.) of tincture of iodin three times daily. The results of this treatment in a more extensive series of cases will be awaited with much hopeful anticipation.

LOCAL COLONIC TREATMENT

In a condition that is essentially a local ulcerative lesion of the colon, the main interest of therapy lies in topical applications, in the form of colon irrigations. To this purpose, innumerable substances in the form of aqueous solutions have been used, including all the milder alkaline salts, astringents and antiseptic solutions. Each author will profess a preference for some particular substance, often claiming for it a unique therapeutic efficacy against bacterial action in the intestinal mucosa. Silver salts, potassium permanganate, zinc sulphate and iodin have all their ardent enthusiasts. One observation seems to hold good; namely, that any-

5. Graham: Proc. Roy. Soc. Med. (Sec. Med.) **13**: 23 (Dec.) 1919.
6. Crosse and Delord: Ann. d'ocul. **154**: 33, 1917.
7. Yudkin, A. M., and Lambert, R. A.: J. Exper. Med. **38**: 17 (July) 1923.
8. Schmidt, Adolf: Klinik der Darmkrankheiten, 1913.
9. Logan, A. H.: M. Clin. N. A. **7**: 105 (July) 1923.

thing that is in sufficient concentration to be a bactericide will cause so great a local reaction as to make it undesirable and irritating rather than healing. This rule applies to most of the solutions suggested; they are either entirely bland and therefore useless, or they are strongly bacterial disinfectants but markedly irritant. Simple colonic irrigations with a bland saline have little in their favor and give rise to more objectionable discomfort and colic on the part of the patient than the procedure is worth. If left to choice, patients usually prefer no colonic treatments rather than suffer the vain interference with their comfort which leads to no visible relief from the intestinal symptoms.

However, it is questionable whether even the milder cases will do well without any form of local irrigation treatment; the vast majority require some local antiseptic lavage, the only question being the choice of a nonirritating but potent bactericide. Thus, we have experimented with surgical solution of chlorinated soda, diluting it down to one-fifth or one-tenth its usual strength and using it both as a colonic irrigation by rectum and by irrigation through a cecostomy opening. The irritating effects are too annoying to allow the use of this powerful solution with any hope of comfort or of success.

Gentian violet solution, according to the suggestion and formula of Churchman, was tried with temporary good result. Iodin, in the form of a weak solution of iodin in sesame oil, instilled locally through a speculum, proved again too irritant to be encouraging.

During the last two years we have used an aqueous solution of neutral acriflavine in the therapeutics of ulcerative colitis (nonspecific); the results are so satisfactory and encouraging as to warrant the present report of the clinical results. Neutral acriflavine is a synthetic compound related to the sulphonephthaleins. It gives a highly colored yellow solution which is strongly antiseptic, nonirritant to the tissues, and nontoxic, and which has the most desirable property of rapid diffusibility. According to Davis and Harrell,[10] it is potent as an antiseptic in alkaline urine, inhibiting the growth of the colon bacillus or of *Staphylococcus aureus* in dilution up to 1:200,000. In acid urine it is less effective, inhibiting growth of the colon bacillus only up to 1:5,000. It is not rapidly germicidal; its value lies in its antiseptic value. It is incomparably stronger in its inhibitory activity against the gonococcus than are the silver salts. Acriflavine inhibits the development of the gonococcus in the extreme dilution of 1:300,000, while protargin strong permits growth in concentrations up to a 1:500 solution.

Neutral acriflavine is nontoxic. The English authors, who used it extensively during the war for the treatment of wounds and chest infections, placed it in large quantities in the pleural and peritoneal cavities, and even injected 300 mg. intravenously without ill effects.

The rapid diffusibility and penetrability of the dye is shown in the experiment in which a 1:1,000 solution was injected into the urethra of a dog, the animal being immediately killed. Sections of the urethra showed that the dye had already penetrated through the mucosa and to the muscles of the urethra and bladder. (In our sigmoidoscopic experience it was not unusual to note the deep staining of the rectal mucosa with the dye as late as twelve hours after the last acriflavine enema had been given). It is nonirritating in usual clinical practice. In the urethra, in strengths of 1:1,000, it may give rise to some transient smarting or burning. In the rectum and colon in strengths of from 1:4,000 to 1:2,000, it is practically entirely devoid of irritating qualities.

The success of one of us in treating a case of gonorrheal proctitis with neutral acriflavine, when all silver salts had failed, led to the suggestion that it was a drug which had an applicability in ulcerative proctocolitis.

Neutral acriflavine in strength of 1:4,000 aqueous or saline solution has been used by us in the last fourteen cases of this series, ending with December, 1923. The cases treated since that date have not been included, as being too recent.

METHOD OF APPLICATION

The best results are obtained by beginning with an enema of 750 c.c. of the solution, the enema to be given twice a day and to be retained each time for from ten to twenty minutes. The patient lies in the left lateral position during the injection, an ordinary rectal tube inserted 3 or 4 inches being all that is necessary to assure full contact of the colon with the solution. No other cleansing enema is necessary during the course of the treatment. As the symptoms of urgency and diarrhea abate (and as they usually do within the first, or in obstinate cases within the second, week), one may reduce the treatment to once daily, now increasing the strength of the solution to 1:3,500, and in a few days to 1:3,000. There does not seem to be much, if any, advantage in increasing the concentration of the dye to any greater degree. The appearance of an excess of mucus in the colonic return calls for a diminution in strength and frequency of the treatments. Acriflavine, when too assiduously applied, or in too concentrated a solution, may produce a catarrhal reaction on the part of the tissues.

The treatment is continued until the temperature is normal and the diarrhea has ceased. In favorable cases the only movement may be that accompanying the return of antiseptic enema solution, or one other semisolid defecation.

One may now administer the neutral acriflavine enema on alternate days, using a weak solution of sodium bicarbonate (0.5 per cent.) on the intervening days, the weak alkali tending to increase the antiseptic action of the dyestuff. The treatment is continued until proctoscopic and sigmoidoscopic examinations clearly demonstrate the disappearance of all ulcerative lesions and the return of the normal appearance of the rectal and sigmoid mucosa. Not until such has been clearly established is the patient to be regarded as cured and the treatment discarded. Occasionally, in the late stages, the injection of small amounts (from 50 to 100 c.c) of 10 per cent. solution of a sulpho-ichthyl in liquid petrolatum or cottonseed oil is advantageous. Two per cent. scarlet red in olive oil has been recommended (Logan).

THE EVIDENCE OF HEALING AS CONTROLLED BY EXAMINATION

During the period of observation and treatment, it is essential and advantageous to make repeated proctoscopic and sigmoidoscopic examinations. The results of such examinations are interesting and instructive, acting as a control of the clinical results of the therapeutic effort. In the early stages, an examination once in two weeks is all that is desirable, the discomfort of the examination in the acute stage is not well tolerated by an exhausted patient. As healing proceeds, weekly

10. Davis, E. G., and Harrell, B. E.: J. Urol. 2: 257 (Aug.) 1918.

examinations are advantageous; at this stage the patient, convinced of the progress he is making, is glad to cooperate.

The earlier local effect of the neutral acriflavine enema is a marked lessening of the frequency of the stools, a diminution, and eventually a disappearance of the urgency or straining at stool. Coincidentally, at least in the cases that act favorably, the temperature diminishes and the patient feels subjectively a marked improvement in his appetite and in his general state of well being.

Sigmoidoscopic examinations made at this time reveal a lessening of the diameter and depth of the ulcers; the purulent secretion is replaced by a mucoid or seromucoid discharge; the rectal mucous membrane shows less tendency to bleed as the tube of the instrument is introduced; free blood in the rectal canal may already be absent. By the second week, one observes a disappearance of the ulcerative lesions. A few small, superficial ulcerations may remain; the mucosa is no longer injected and hemorrhagic, but has assumed a fairly normal appearance. A mucoid discharge may be present, but blood and pus are conspicuously absent. The stools at this time are semisolid or solid, and passed without straining.

By the third or fourth week, one not infrequently observes full healing of the mucosa of the lower segments of the bowel. It is astonishing how rapidly and completely a bowel studded with small or with larger, even deep and indurated ulcers can give place in a few weeks to a normal appearing mucosa in which no evidence of the previous lesion can be found.

The healing of an ulcerated mucosa anywhere in the gastro-intestinal tract without the evidence of scar formation is an accepted fact, cicatricial contractures or permanent scarring taking place only when the most aggravated ulcers have penetrated the mucosa and submucosa and invaded the muscularis and pericolonic tissues. About the anus and in the lower segment of the rectal ampulla, healing with scarring and stricture formation not only may, but quite frequently does, take place. With this exception, however, even deep lesions of the rectum and sigmoid heal without leaving a trace visible of their previous existence. Lockhart-Mummery[11] says that in a series of 5,000 cases of colitis he has yet to see a case of stricture of the lumen of the large intestine.

In the chronic cases, those of long standing averaging from six months to as many years, or more, the results are proportionately less striking and favorable; failure of the method of treatment may and does take place. On the other hand, though a complete cure may not occur, an alleviation and improvement of the symptoms almost invariably is observable, the number of stools being diminished to one or two a day, and the tenesmus and straining being practically without exception entirely relieved.

The proctosigmoidoscopic picture usually shows a prompt change for the better, the purulent nature of the discharge changing to a clear mucoid secretion and the ulcerations diminishing perceptibly in size and number. Only the largest and deepest ulcers may persist, all the smaller punctuate and superficial irregular lesions disappearing. In a fair number of cases, by persistence of treatment, a complete healing of the entire visible mucosa may be seen, with apparent and lasting cure of the disease.

11. Lockhart-Mummery, P.: Diseases of the Rectum and Colon and Their Surgical Treatment, New York, William Wood & Co., 1923.

As the lesion heals and the ulcers disappear, a stage is reached in which only a granular, dry, follicular appearance of the mucosa remains. By further diligent treatment, this too disappears, to be replaced by a mucosa of normal texture, hue and appearance.

THE LATE RESULTS AS REGARDS CURABILITY

The short period of observation of this series, as well as the scant number of cases treated by this method, necessarily calls for the greatest caution and hesitancy in announcing the percentage of patients benefited or cured. It has often been declared that any change of treatment in a case of colitis or the introduction of colonic irrigations with any solution not hitherto administered may fortuitously lead to a change for the better. There is, without doubt, much truth in this declaration of clinicians of wide experience who have seen in their lifetime the annual heralding of some new form of treatment. Yet the results with neutral acriflavine, in this short time and with this limited series of cases, are at least encouraging.

The accompanying table gives a fair, though meager, comparison of the results of treatment in the years 1921 and 1922, in which no definite aim or method actuated the form of treatment, and the year 1923, in which all patients received the neutral acriflavine treatment. Each group contains about the same number of cases.

Results of Treatment

	No. of Patients	Died		Unimproved		Improved		Cured	
		No.	%	No.	%	No.	%	No.	%
1921-1922.....	15	1	6.6	4	26.6	10	66.6	0	....
1923.....	14	0	....	3	21.5	5	35.7	6	42.8

It will be seen that in 1921-1922, about two thirds of the patients were discharged as "improved" though none were reported as "cured"; practically all left the hospital with a few persisting symptoms premonitory of later trouble. In the last year, under specific neutral acriflavine treatment, we are able to report 35.7 per cent. improved and 42.8 per cent. cured, or a total of 78.5 per cent. improved and cured, a percentage that exceeds the most optimistic reports in the previous literature.

What constitutes a cure?

By cure is meant not only freedom from all subjective and objective symptoms but also a normal appearing mucous membrane of the rectum and pelvic colon as far as observable with a sigmoidoscope. Less than this is apt to create a fallacious impression. No matter how well the patient feels, if by instrumental examination at the time of discharge the colonic mucous membrane still shows the persistence of ulcers or of friability, the patient is not cured. There is not only a liability to recurrence of symptoms, but a relapse of the symptoms has actually been observed within a few months. It is quite likely that the remission stage in colitis means only a temporary subsidence of evident phenomena, with a latent persistence of a low-grade infection with continued hypertrophic granular colitis and indolent ulceration.

A case to be reported as "cured" must have a normal visible mucosa. Even then, there is no scientific guarantee that such cases are immune to reinfection, for within the last two months two of our supposedly "cured" cases have shown slight recurrence of symptoms lasting two to three days only, and immediately checked by a few irrigations with the acriflavine solution.

One additional note may be permitted. In 1921, Arthur Hurst [12] suggested that antidysenteric serum might have some therapeutic value, even in this nonspecific form of the disease. He had used the serum intravenously, in large doses (from 40 to 100 c.c.) in two cases, and reported rather striking results in both cases.

Following this suggestion, we attempted to follow his lead, choosing as a trial case a patient who was doing badly on all given forms of recognized treatment. The pateint was emaciated, suffering from severe abdominal pain and diarrhea. The temperature ranged between 102 and 104. Two large doses, from 30 to 50 c.c. of polyvalent antidysenteric serum, were injected intravenously about a week apart. Each injection was followed by a violent reaction, the temperature dropped to subnormal, and the patient was almost in collapse, with thready, weak pulse, rapid respiration and blanched skin.

The first injection was followed by some objective and subjective improvement in the symptoms. The second injection was followed almost immediately by complete subsidence of the active manifestations of the disease. The temperature remained normal, the diarrhea was reduced to one or two defecations a day, and rapid gain in health and strength followed. The entire course of the disease was undoubtedly changed by the injection of this nonspecific serum, and materially changed for the better. The patient, while markedly improved, was not cured; a year later he still exhibits the manifestations of the disease, though in a distinctly milder form. To any impartial observer, the beneficial use of this serum must have been striking as well as surprising.

In a second case of indolent chronic ulcerative colitis of five years' standing, an example of the disease in its most chronic and hopeless form, the serum was administered. The same protein shock resulted, though no evident benefit accrued to this second patient.

It would seem that the suggestion of Hurst is worthy of considerable thought, whether from the standpoint of serum therapy or from that of nonspecific protein therapy against a severe and often baffling infection.

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ABSTRACT OF DISCUSSION

DR. GEORGE C. MIZELL, Atlanta, Ga.: Dr. Crohn has divided chronic ulcerative colitis into five stages. Whether they are all manifestations of the same disease or not I have no opinion, except that I am disposed to regard polyposis as a distinct diseae. We have not been able to observe the transition of one stage into another. Polypoid colitis has not yielded to the same measures employed by us with success in the chronic ulcerations. We have observed the tendency of polypoid colitis to progress to stricture formation and malignancy. An analysis of his tabulated results shows, in round numbers, 21 per cent. unimproved, 35 per cent. improved and 42 per cent. cured. I should like to know whether he has formed any conclusions as to the reasons for this difference in reaction to the treatment: Does the stage bear any outstanding relation to either group, and would it suggest a difference in bacteriology? In this connection I have been much impressed with the work of Dr. Bassler, who in July, 1923, presented a study of the use of both gentian violet and acriflavine. Eighty per cent. of his cases could be divided into two groups, one presumed to be infected with gram-positive organisms, the other with gram-negative. He used gentian violet in the gram-positive infections, and acriflavine in the gram-negative. He states that failure to observe such indications is followed by alarming results in some cases. He also states that these colons have a tendency to remain friable, for which occasional doses of bismuth subnitrate are needed. Dr. Crohn has carried out this work in a thorough way. He has shown that control of the inflammation in the colon can be accomplished, in some cases, by local measures alone. Perhaps the uncured cases belong to a distinct group in which the ulcerated colon is not a local disease entity. I have noted many patients who, after resisting the ordinary methods of treatment, yield promptly to removal of the appendix. It is well to bear focal infections in mind, both as etiologic factors and as a source of recurrences. The appendix is, after all, a part of the colon, and an infection here is difficult to reach; also, an infected appendix sooner or later means an infected colon. In my own cases I use a basic diet consisting of boiled milk, toast, crackers, soft rice, soft eggs, a little butter, scraped steak, lamb chops, sweetbreads, milk and egg puddings, a little orange juice and weak tea, together with massive doses of bismuth subnitrate. This has given a higher percentage of cures except in polypoid colitis. Two years ago, *Bacillus acidophilus* milk culture was added to this regimen, giving more prompt results.

DR. SIDNEY A. PORTIS, Chicago: Dr. Crohn's period of observation in some of the cases is long enough to afford a basis for drawing some very definite conclusions as to the efficiency of his method of treatment. In a series of cases we have been using quite extensively *B. acidophilus* therapy, both given by mouth and injected rectally and high up through colonic tubes, and we have had some very gratifying results. Some of our patients have remained well up to the present time, and it is now four years since we started this method of treatment. They have all been a nonspecific form of ulcerative colitis. It must be remembered that *B. acidophilus* therapy must be continued over a period of months and even years. Our longest case has a record of four years of treatment, and the patient is very comfortable, has no return of symptoms, and has gained more than 30 pounds (13.6 kg.). We were particularly interested in following these cases from the standpoint of the flora of the intestinal tract, both by smear and by cultural method, and I would ask Dr. Crohn whether he has noted any change in the intestinal flora through the application of neutral acriflavine, and also whether he has noted any inhibitory influence on the predominating type of organism found in his cases. Has he made any cultures for the purpose of noting whether or not there has been a diminution in the predominating organism previous to treatment? Further, I would ask whether he has added neutral acriflavine to culture mediums, and inhibited the organisms that have been isolated as a causative factor of the disease. I ask these questions because it has been my experience that with certain dye-resisting mediums I have not been able to obtain certain forms of streptococci and diplococci that have been found in these cases. In addition to an appropriate diet, in some of the protracted cases, and particularly if the patient is anemic, we have made repeated blood transfusions, with beneficial results. As Dr. Mizell has emphasized, we also search for foci of infection, whether they are abdominal or in the respiratory tract. In addition, I believe that sufficient bacteriologic cultures should be made in order to enable us more scientifically to control the efficacy of the method of treatment.

DR. FRANK SMITHIES, Chicago: As many agents cause similar pathologic changes in the large bowel, a classification of "ulcerative colitis" based on pathology is open to objection. As failure to consider the etiology in the production of colon ulcerations leads nowhere, any method of therapy suggested in consequence is nothing more than a "shotgun." In applying any therapeutic procedure to ulcerative colitis, one must endeavor to determine the etiologic factors causing the ailment. Was the lesion produced as a consequence of abnormal material in the alimentary tract, whether feces or what not? Was the causative agent a means of protozoan infestation? Was it due to blood or lymph-borne infection, and so on? It is the lymph and blood-borne infections which account for the occurrence and the persistence of the large majority of lesions described as "ulcerative colitis." It becomes evident that any local therapeutic application to the alimentary tract administered by mouth or by rectum will really reach the complications of the disease in the majority of

12. Hurst, A. F.: Guy's Hosp. Rep. **71**: 26 (Jan.) 1921.

cases. Consequently, one can bring forward hundreds of different antiseptics and locally acting remedies if treatment is suggested without regard to etiologic aspects; and if a practitioner follows through a series of cases over a long or a short time, he will be able to submit tables giving percentages of cures approximately similar for the different local therapeutic agents employed. Thus, my main object is to point out the danger of drawing conclusions from the employment of topical applications. The basic principles of treating "ulcerative colitis" are rest to the part affected and protection of the lesions from trauma. We do not believe that a patient with active ulcerative colitis should be given any food that leaves residue in the bowel, any more than should a person with active stomach ulceration have food put into the stomach. The dietetic principles which we carry out are a low residue diet and the consequent limitation of food waste which acts as a trauma to ulcerative lesions. Relaxation of spasms is secured by the use of tincture of belladonna. If such a procedure is carried out, most of these cases will heal, particularly if one does not "overtreat" them. We rarely employ topical remedies to the bowel, apart from such simple solutions as warm physiologic sodium chlorid solution, given wholly with the object of mechanically cleansing lesions which can be reached by colon lavage.

DR. SIDNEY K. SIMON, New Orleans: I quite agree with Dr. Smithies in his contention that the diet in all ulcerative conditions of the colon should aim at simplicity and blandness, taking into due consideration Dr. Crohn's point in regard to vitamin deficiency, which I think can be easily overcome by recognition of that possibility. In regard to *B. acidophilus* therapy, during the last two years I have been using acidophilus milk in colon irritations and ulcer, and I believe that it does distinct good. From my own experience there is just one point to be remembered, and that is not to use too large an amount in diarrheal conditions. Acidophilus milk has a tendency to purge. If one uses one-half glass with three meals a day, that serves a useful purpose in changing the intestinal flora.

DR. JEROME M. LYNCH, New York: The bacteriology from an etiologic standpoint has always been discouraging. Such men as Flexner, Hastings, McFarland and Torrey, after patient study, abandoned it as too complex, so I do not think we can hope for much from a bacteriologic standpoint. Nonspecific, ulcerative colitis occasionally extends to the ileum. When this occurs, ileostomy is a necessity. In my opinion, there is no specific treatment for nonspecific infection of the bowel. A solution that will give good results in one case will be absolutely ineffective in another. A not unusual complication is intramural abscesses, with high temperature. Occasionally, perforation occurs, and in one instance, in which we had a necropsy, it was found that perforation had occurred in the cecum, and the abdomen was filled with feces.

DR. ANTHONY BASSLER, New York: I am sorry I have to disagree in part with Dr. Lynch, but I believe this condition has a bacteriologic basis and that it is a submucous infection from the interior of the intestine. We believe that diet does not make much difference. We have heard this afternoon of fasting, of a very liberal diet, and a carbohydrate diet, but an anticonstipation diet has not been mentioned in this connection, and that is one worthy of consideration in some of these cases. As. Dr. Smithies has said, we should keep the intestine clean. Dr. Lynch was right in his statement regarding involvement of the ileum. Thus, often the use of the transirrigation method with the duodenal tube is valuable. We have used it in some cases with gentian violet, in others with mercurochrome-220 soluble, and some with acriflavine, but the best results so far as dyes are concerned have come by the use of both acriflavine and gentian violet together in about 1:4,000 each, gradually intensified. These infections are not single; they are a mixed infection in which *B. coli* figures and usually one of the gram-positive organisms of the single or double coccal forms. The acriflavine does not prevent growth of the gram-positive forms of anaerobes as does the gentian violet; and so likewise the gentian violet is not very destructive to the gram-negative forms of growth. Keeping in mind that there is a mixed infection, one multiplies the dose to attack both ways if one can. But the one important feature in the treatment is persistence and patience. One should keep the intestine clean and give sufficient food tonics, fresh air, and rest to build up the general resistance of the body.

DR. R. W. JACKSON, Fall River, Mass.: Now and then we have a case with marked and persistent bleeding which is difficult to control and leads to rather marked secondary anemia. I would ask Dr. Crohn what the indications are in the treatment of this complication.

DR. BURRILL B. CROHN, New York: Those who have discussed the paper have added important suggestions to the view we have advanced in regard to the treatment of this disease. I am unable to go into the pathologic picture of the disease. The five stages that I have enumerated are simply stages of the same disease; the polypoid stage is one we not infrequently see. I do not know why some of the cases fail to react to treatment of any kind. Regarding ileac involvement, referred to by Dr. Lynch and Dr. Bassler, at the Mayo Clinic an ileostomy is done in such cases. Such an operation may be the deciding factor in an obstinate case. On the other hand, when one recognizes the pathology of the disease and recalls that in some cases of ulcerative colitis the induration of the intestine is so great that its normal depth of a few millimeters is increased to almost a centimeter, the difficulties of treatment are apparent. In a case of ulcerative colitis in which it was decided to have colostomy done, at operation the entire colon was so indurated and thick that the cecum and transverse colon could be lifted by raising the sigmoid. It was like a piece of rigid tubing. The question of *B. acidophilus* milk is interesting. In this connection we tried some experiments, beginning with one case of cecostomy, and hoped by implanting into the cecum live, active cultures of *B. coli* to be able to change the flora of the intestine; but we found that as fast as we put the bacilli into the cecostomy opening they were expelled with the stool. If they are put into the cecum at 3 o'clock they are found in the rectal discharge in one-half hour or an hour, and within six hours all *B. coli* will have disappeared. I must accept the criticism of Dr. Smithies as to the fact that I did not take up discussion of the disease from the etiologic standpoint. There is little value in studying the results of therapy on the bacterial flora, since we do not know the etiologic significance of such micro-organisms. I feel that there must be a symbiotic activity between *B. coli* and the hemolytic streptococcus. It is true that many different drugs cause betterment in ulcerative colitis. I ask the privilege of mentioning here a fact told me by the late Dr. R. Walter Mills, who had had considerable experience with the use of mercurochrome-220 soluble in ulcerative colitis. He was very enthusiastic about this treatment. I do not see why mercurochrome should not act successfully in a certain proportion of cases. Acriflavine is nonirritating, and therefore I chose it as the best type of chemical with which to combat the disease. The combination of acriflavine and gentian violet will possibly have much better effect than one of these agents alone. Anemia and loss of weight in this disease are phenomenal. It is remarkable to note how rapidly a patient can lose from 20 to 40 pounds (9 to 18 kg.) within a few weeks, and it is just as interesting to observe how quickly they can regain it when improvement begins. The gain of weight and the increase in the hemoglobin are rather rapid; the loss is rapid and the gain is rapid.

Elements of Success in Securing Enactment of Health Legislation.—Constitutionality, clearness and machinery of enforcement are the three elements on which the success or failure of every act depends. The time and thought expended at this point on any piece of proposed legislation is invariably amply rewarded after the bill becomes public property, and is presented to the legislature for consideration. Poor preparation and faulty draftsmanship have often delayed the enactment of necessary health legislation, and as a result have postponed for many years improvements in public health conditions.—R. G. Paterson: *Hosp. Soc. Serv.* **39**:18 (Jan.) 1924.

EXPERIMENTAL STUDIES ON THE ETIOLOGY OF CHRONIC ULCERATIVE COLITIS

PRELIMINARY REPORT *

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The salient features of chronic ulcerative colitis are a continuous or intermittent intractable, bloody diarrhea, and sometimes abdominal pain, anemia, fever and general debility. The inflammation of the colon is evidenced by a hyperemic and edematous, granular, easily bleeding mucous membrane or profuse exudate covering the lining, and, later, superficial and deep ulceration. The ulcers for the most part are confluent and shaggy, with indefinite borders and with no special point of origin in the mucosa. The infection begins in the rectum and lower colon, and progresses upward to the cecum, sometimes invading the lower ileum. It may remain localized in the rectosigmoid region for months or years.

The disease was first mentioned by Wilks and Moxon,[1] in 1875, but was first described by White,[2] in 1888, although Hawkins [3] believes that the "pedigree of this disease can be traced back nearly three hundred years in the 'bloody flux' of Sydenheim in 1669." Much has been written on the subject since its first description, but the most complete analysis of the disease was published by Logan,[4] in 1919.

ETIOLOGY

Hawkins,[3] in 1909, in a consideration of the natural history of ulcerative colitis, described the hemorrhagic form with "its primary localization in the lower segment of the colon"; and emphasized the necessity of determining its exact bacteriology, not by examining the stools, but by scraping the colon mucosa. He concluded that a specific serum should be ideal, since the lesions are localized and the blood is not invaded.

Logan believes that the underlying cause of the colitis is a metabolic disturbance. Gross [5] was able to produce

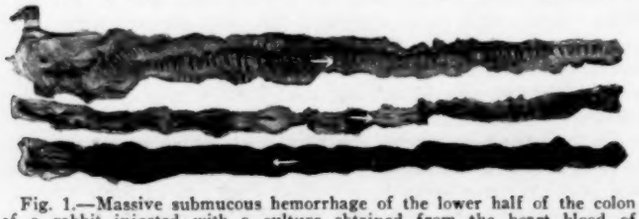

Fig. 1.—Massive submucous hemorrhage of the lower half of the colon of a rabbit injected with a culture obtained from the heart blood of another rabbit with colon ulcers.

minute ulcers of the colon in 3 per cent. of a large number of rats on a diet deficient in vitamins. Bassler [6] and others believe that *Bacillus coli-communis* is an important etiologic factor, asserting that this organism becomes especially virulent under proper conditions. Bassler ventures the designation of *pseudodysentericus coli* for the organism found predominant in some of his patients. He also says that when the organism is injected intraperitoneally into cats, rabbits or guinea-pigs, death occurs early. Many men include as etiologic factors the ordinary bacteria found in the feces. Jex-Blake,[7] in reports from London hospitals in 1909, considers, as factors, *Bacillus coli, proteus* and *pyocyaneus*, and streptococci. White [8] says, "I have met with cases due to *Bacillus coli*, and some to pneumococci." Stone [9] and Yeomans [10] found only the usual intestinal inhabi-

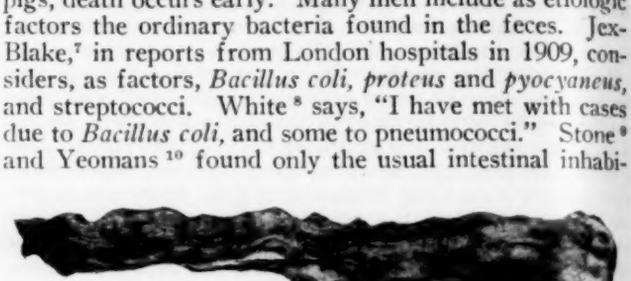

Fig. 2.—Many minute ulcers and hemorrhages of the lining of the lower end of the colons of two rabbits.

tants. Wallis [11] found streptococci in the stools of many of these patients, and emphasizes the importance of mouth sepsis. Hewes [12] speaks of idiopathic invasions of the colon in persons in perfect health. He isolated streptococci, staphylococci, colon bacilli and gas bacilli, and emphasizes the fact that often the disease appears as a sequel to another infectious disease, such as pneumonia, influenza, measles and diphtheria. Mummery [13] considers streptococci and *Bacillus coli* important factors, and, in the hemorrhagic form with its spongy mucosa, the diplococcus of pneumonia as the usual cause. He says that the mucosa in this type bleeds easily, is granular, and appears as if sandpapered. Other observers believe the condition to be the result of a former infection by some form of dysentery bacillus, *Bacillus dysentericus* having disappeared from the stools and left its results with secondary invaders to keep up the infection. This would seem a plausible theory in the light of the work of Flexner and Sweet,[14] who produced lesions from edema and small hemorrhages, and at times a diphtheric membrane, by the intravenous injection of Shiga and Flexner dysentery bacilli or their toxins. In their rabbits, the lesions produced were primarily in the cecum and the appendix, rarely in the colon. In 1907, Morgan [15] produced diarrhea in rats and rabbits by feeding a gram-negative bacillus, isolated from the stools of infants with summer diarrhea, differing from the ordinary dysentery bacillus in its sugar fermentation reactions. The view

* Work done in the Division of Medicine, Mayo Clinic, and in the Department of Experimental Bacteriology, Mayo Foundation.

* Read before the Section on Practice of Medicine at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

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that the dysentery bacillus is an important factor has gained ground since the World War. Einhorn,[16] Hurst,[17] Leusden [18] and others seem convinced of this theory, and Hurst reports good results by giving polyvalent antidysenteric serums, while Leusden advocates autogenous vaccine therapy.

At the outset of this study, attempts were made to isolate dysentery-like bacilli, but without success. However, large numbers of gram-positive diplococci were found in smears from the lesions in the bowels of patients with ulcerative colitis. These organisms also were found in predominating numbers in primary cultures in glucose brain broth, the medium used by Rosenow [19] and others in localization studies. It was believed, therefore, that growth of the causative organism might occur in this medium, since it afforded a gradient of oxygen tension, whereas only the more saprophytic organisms might develop on blood agar plate cultures. Furthermore, localization in the colon might occur following the intravenous injection of the primary mixed culture, and possibly the causative organism might be isolated from the tissues of animals developing lesions.

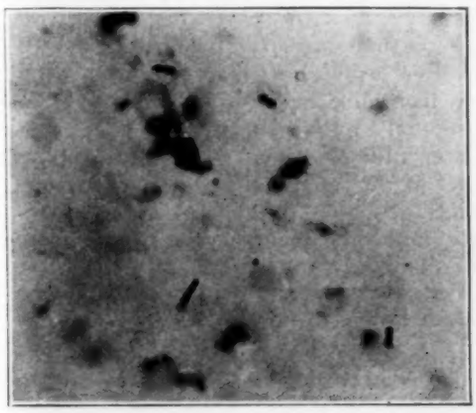

Fig. 3.—Gram-positive diplococci.

METHOD OF STUDY

The condition of twenty-two patients with chronic ulcerative colitis, observed in the Mayo Clinic from December, 1923, to June, 1924, was studied. The study did not include the postwar type of chronic dysentery, but only the sporadic infections of persons in civilian life. In the routine laboratory examinations, bacilli of dysentery or tuberculosis, or ameba had never been found in the stools, nor did there seem to be adequate reason for suspecting such a cause. A representative case history follows.

REPORT OF CASE

The patient came to the Mayo Clinic, Dec. 26, 1923. He had had much mucus in the stools for a year, and blood-tinged stools for six months, the blood and mucus increasing steadily in amount. During the previous six months, urgency, stools as frequent as twelve in twenty-four hours, the passage of blood with slight pain about 3 a. m., and general debility, were his chief complaints. Five months before, he had had kerosene irrigations for a month. When at rest, he had fewer stools. He had lost 4 pounds (2 kg.) in six months, and the physical examination revealed nothing of note except a very spastic anal sphincter, and slightly painful hip joints from arthritis, which had troubled him for about six months. The leukocytes numbered 9,800 and 13,400, on two occasions. In three stool examinations, no parasites or dysentery bacilli were found. The roentgen ray revealed a slight spasm in the rectosigmoid region, and the proctoscopic diagnosis was ulcerative proctosigmoiditis. Treatment consisted of a course of tincture of iodin, kaolin, a slight amount of parathyroid and calcium lactate, local irrigations, and autogenous vaccine. Eight of fifteen rabbits injected with cultures from this patient developed lesions, as shown in the accompanying table.

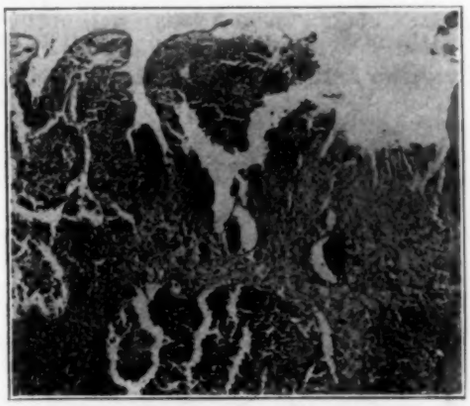

Fig. 4.—Section through an ulcer of the colon of a rabbit with ulcerative colitis (× 18).

The patients were all prepared by a thorough castor oil purge the evening before the examination, and a warm water enema just before the examination, until the mucosa of the colon appeared thoroughly clean. Material for culture was obtained through the proctoscope with sterile swabs from the base of the ulcers of the colon, or from the granular, easily bleeding mucous membrane. This was examined microscopically in stained smears and transferred to warm dextrose brain broth, dextrose broth, and physiologic sodium chlorid solutions, and cultures made in dextrose broth, dextrose brain broth, blood agar and lactose Endo-agar plates. All cultures were incubated at 36 C.

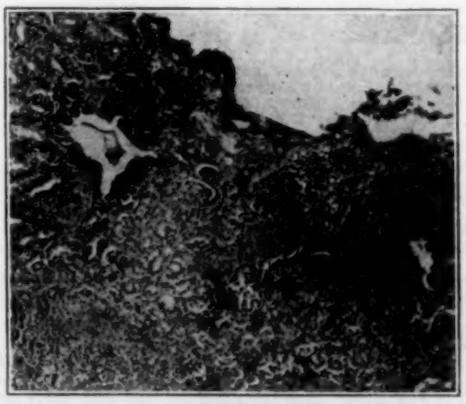

Fig. 5.—Section through an ulcer of the colon of a rabbit with ulcerative colitis (× 50).

Healthy rabbits, weighing about 4 pounds, and free from diarrhea, as noted by several days' observation, were chosen. They were fed greens, oats, hay and water, and were observed daily. Two or more rabbits were injected intravenously with the material from each patient. From 2 to 5 c.c. of a twenty-four hour

16. Einhorn, Max: Chronic Ulcerative Colitis and Its Treatment, New York M. J. **117**: 214-218 (Feb. 21) 1923.
17. Hurst, A. F.: Ulcerative Colitis, Guy's Hosp. Rep. **71**: 26-41 (Jan.) 1921.
18. Leusden, J. T.: Observations on Colitis Ulcerosa with a Contribution to the Knowledge of the Pathogenic Effects of Colon Bacilli, Nederlandsch. Tijdschr. v. Geneesk. **2**: 2890-2905 (Dec. 10) 1921.
19. Rosenow, E. C.: Studies on Elective Localization, Focal Infection with Special Reference to Oral Sepsis, J. Dent. Res. **1**: 205-268, 1919.

dextrose brain broth culture, containing the diplococcus in predominance, was injected, and in some instances from 3 to 8 c.c. of a pure culture of this diplococcus. The rabbits that survived the inoculum were chloroformed for examination in from one to twenty-eight days, depending on the symptoms. At necropsy, cultures were made from the blood, abdominal lymph glands, spleen, and, in a few instances, from the lesions in the colon. Tissues were preserved in neutral formaldehyd for future examination.

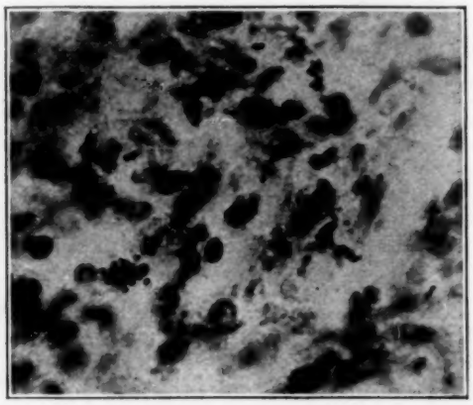

Fig. 6.—Section through ulcer shown in Figure 5, showing numerous diplococci in the tissue (× 1,000).

RESULTS

In smears from the lesions of patients, two organisms were seen in predominance, a gram-positive diplococcus and a gram-negative bacillus. In dextrose brain broth cultures, the gram-positive diplococcus grew in predominance in the majority of patients; often this also was true on the blood-agar plates. On the lactose endo-agar plates, a gram-negative bacillus, in all essentials like a colon bacillus, grew.

In from twenty-four hours to several days, the animals developed a violent diarrhea, often with blood and mucus in the stools. They lost weight, and wasted rapidly. At necropsy, after the animals had died or had been killed, gross lesions were found primarily in the colon. The seat of election for these lesions, ranging from disseminated petechial hemorrhages and massive submucous hemorrhages to superficial ulcers of the mucosa, was from the rectum upward (Figs. 1 and 2). In many instances only the lower half of the colon was affected, with the most extensive lesions beginning at the anal mucocutaneous juncture. In certain rabbits, lesions extended to the cecum, and in a few to the lower ileum, rarely higher, as shown in the table.

Of 190 rabbits injected intravenously, fifty-six developed lesions as described. Of these, eleven had received pure cultures of the diplococcus in dextrose brain broth; the other forty-five, mixed cultures. The lesions in the main were more extensive, and the diarrhea more severe in those that had received mixed cultures of the gram-positive diplococcus and the gram-negative bacillus. Twenty-three others developed diarrhea, but no gross bowel lesions. Seven had only marked hyperplasia of the mesenteric lymph glands. Sixty-five did not develop lesions or diarrhea, and of these the majority had pure cultures of diplococci in dextrose broth, isolated by the plate method. Of the sixty-five, thirty are still alive and without symptoms. The remainder of the rabbits injected died from intercurrent infections.

A few rabbits were given the gram-negative bacilli alone in dextrose brain broth, and these died within twenty-four hours after the injection, but in no instance were bowel lesions found.

Chronic Ulcerative Colitis: Comparison of Lesions Found in Patients and Those Produced in Rabbits

Case	Proctoscopic Findings in Patients	Source of Material	Lesions in Rabbits	Injections	With Lesions of the Bowel
1	Diffuse rectosigmoiditis (ulcerative colitis)	Base of ulcers	In one, extensive colon hemorrhages; in another, granular ileitis and colitis, with gray membrane in places (bloody mucus in bowel)	4	2
2	Ulcerative colitis; much exudate clinging to rectal wall; diarrhea one year	Base of ulcers	In some, extensive ulcers of the colon; in others, submucous hemorrhages and a granular mucous membrane; in all, diarrhea with mucus and blood	15	8
3	Diffuse proctitis (chronic ulceration); diarrhea three years	Base of granular mucuos membrane	Extensive hemorrhages in the colon, ileum and duodenum; diarrhea	2	1
4	Diffuse ulcerative proctosigmoiditis; extensive exudate and deep ulcers	Base of ulcers	In one, solitary ulcers of the colon; in another, extensive submucous and subserous colon hemorrhages (bloody liquid feces)	5	4
5	Diffuse proctitis; bloody diarrhea ten months, with remissions	Surface of granular mucous membrane at rectosigmoid	In one, solitary ulcers in ileocecal region; in another, extensive submucous hemorrhages in colon and rectum, with very marked diarrhea	21	6
6	Diffuse granular proctitis; diarrhea two months	Base of granular mucous membrane	In one, multiple chronic ulcers of ileum with gray membrane, twenty days after first injection; in another, submucous hemorrhages in rectum and descending colon, with granular proctitis	13	3
7	Extensive ulcerative proctosigmoiditis; diarrhea one year	Base of ulcers	In one, hemorrhages of the rectum and descending colon only	8	1
8	Diffuse ulcerative colitis 3, with contraction	Base of ulcers	In one, multiple ulcers of the colon and fibrinopurulent peritonitis; in another, the colon packed with mucus	11	3
9	Ulcerative proctitis for about 15 cm.	Base of ulcers	Extensive submucous hemorrhages and a few ulcers, 1 to 2 mm. in diameter; bloody mucus in colon	2	1
10	Diffuse proctosigmoiditis; diarrhea, with remissions, three years	Base of ulcers	In one, multiple submucous ulcers, about one to each square centimeter, hemorrhages in terminal 2 feet of ileum (diarrhea); in another, huge diffuse hemorrhages of rectum and colon up to cecum (bloody diarrhea)	7	2
11	Diffuse proctitis with some ulceration; diarrhea, with remissions of three and one-half years	Base of ulcers	Diarrhea and very marked hyperplasia of the mesenteric and retroperitoneal lymph glands	7	1
12	Chronic ulcerative colitis 3.....	Base of ulcers	In several, solitary ulcers in colon and ileum, with much mucus in colon; in others, submucous hemorrhages in colon, with diarrhea	16	6
13	Chronic ulcerative colitis; diarrhea twenty-five years	Retroperitoneal lymph glands and spleen at necropsy	Lesions ranging from solitary ulcers in ileum to extensive submucous hemorrhages in lower half of colon, with bloody diarrhea	41	16
14	Mild granular proctitis.....	Mildly hyperemic mucosa	In one, multiple submucous hemorrhages in lower 2 inches of colon; in another, multiple solitary ulcers of ileum and appendix	22	9
15	Chronic ulcerative colitis; perirectal abscess	Fresh colostomy wound	Multiple ulcers in colon and two large ulcers in appendix; generalized peritonitis; only bloody mucus in colon	8	2

A closer analysis of the fifty-six animals that developed lesions in the bowel following the injection of the diplococci of fifteen different patients, with or without the bacilli, revealed diarrhea clinically in thirty-eight, of which many passed mucus and blood by rectum. Twenty-three rabbits died; the other thirty-three were killed with ether or chloroform from one to twenty-eight days after their initial injection, depending on their symptoms. When killed, all had liquid to mucohemorrhagic bowel matter in the colon, although without diarrhea clinically. Lesions from hemorrhages to ulcers were found in the colon in forty-four; in the rectum in eight; in the ileum in fifteen; in the vermiform appendix in two; in the jejunum in one, and in the duodenum in one. All other organs were carefully examined grossly, and only once were small infarcts found in the kidneys, and once hemorrhages in the lumbar muscles.

The diplococcus found in these cultures was gram-positive, plump, with a tendency to be lancet-shaped, and about the size of a pneumococcus, not forming capsules, and with very little tendency to grow in chains. On blood-agar plates, this organism grew as an alpha-hemolytic streptococcus (Brown). The sugar fermentation reactions, in five instances in which they were tested, gave no reactions with inulin or with mannite, the former usually considered differential for the pneumococcus, the latter for the streptococcus fecalis. This diplococcus was in the majority of patients by far the predominating bacterium (Fig. 3).

At times, a pure culture of a gram-positive diplococcus was isolated from the mesenteric lymph glands, and occasionally from the spleen, even when a mixed culture had been injected intravenously.

Microscopic sections through the bowel ulcers of rabbits stained for bacteria by the gram method have demonstrated, in many instances, diplococci in the depths of the tissue, in and around the granulation tissue. When

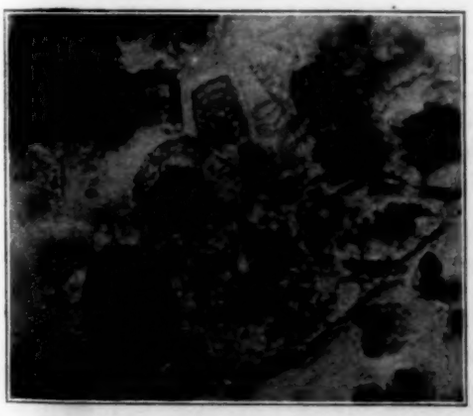

Fig. 7.—Section through ulcer (× 60), demonstrating diplococci (× 1,000).

other bacteria appeared, they were on the surface of the tissue (Figs. 4, 5, 6, 7 and 8).

CONTROL EXPERIMENTS

Four patients were picked at random, who presented themselves for proctoscopic examinations for hemorrhoids, or some condition other than ulcerative colitis. Swabs were made from the colon mucosa in the same way as from the other patients. At least two rabbits were injected with cultures from each patient. In one of these patients, diplococci were found in the cultures, and of three rabbits injected, one developed diarrhea and at necropsy had petechial hemorrhages in the colon. In the cultures from the other three patients, heterogeneous flora were found, and intravenous injection produced no bowel lesions.

THERAPEUTIC SUGGESTION

Since the majority of the rabbits in which lesions appeared had received a mixed culture of the gram-positive diplococcus and the bacillus, a mixed vaccine was prepared for several patients. During the administration of such a vaccine, the patients were given tincture of iodin and kaolin by mouth, and local irrigations and topical applications to the lower colon. Four of five patients so treated left the Mayo Clinic at least temporarily improved.

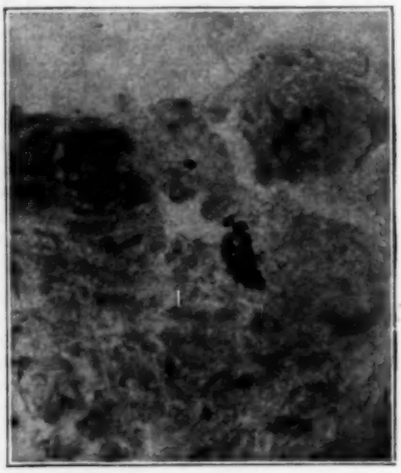

Fig. 8.—A mass of diplococci in the base of ulcer of a rabbit with ulcerative colitis.

COMMENT

In Bumpus and Meisser's[20] work on pyelonephritis, and in Rosenow's on appendicitis, mixed cultures of the colon bacillus and a streptococcus were often used, and no lesions of the colon developed. Nor did Rosenow,[21] in his work on "gastro-intestinal influenza," produce such lesions.

Helmholz and Beeler,[22] in an effort to produce pyelocystitis in rabbits by the intravenous injection of colon bacilli, found lesions in the kidneys in eleven instances; in the cecum in fourteen; in the gallbladder in seven; in the appendix in five, and in the stomach in four, and in one rabbit they found ulcerative colitis. They believe that the most characteristic lesion of the colon bacillus is edema of the cecum. This seems a significant finding, since, during my observations, the most extensive lesions were produced by the mixed culture of the colon bacillus and the diplococcus, or, in a considerable number, by diplococci alone, and no lesions were produced by the colon bacillus alone. When the colon bacilli were injected, the rabbit became very sick, and it seems feasible that the colon bacillus, by lowering the animal's resistance, prepares a good medium for the pathogen's invasion. Furthermore, the large numbers of diplococci in the sections through the ulcers with the colon bacilli on the surface, and the recovery of the pure culture of the diplococcus from lymph glands, would seem to be in favor of the diplococcus being the primary invader.

Similar bacterial flora have been found in every patient with active ulcerative colitis. By the intravenous injection of pure cultures of gram-positive diplococci obtained from the lesions of patients, or, more often, mixed cultures in which the diplococci

20. Bumpus, H. C., Jr., and Meisser, J. G.: Focal Infection and Selective Localization of Streptococci in Pyelonephritis, Arch. Int. Med. **27**: 326-337 (March) 1921.

21. Rosenow, E. C.: Studies in Influenza and Pneumonia, VIII, Experiments on the Etiology of "Gastro-Intestinal" Influenza, J. Infect. Dis. **26**: 557-596 (June) 1920.

22. Helmholz, H. F., and Beeler, Carol: Focal Lesions Produced in the Rabbit by Colon Bacilli Isolated from Pyelocystitis Cases, Am. J. Dis. Child. **14**: 5-24 (July) 1917.

were present in predominating numbers, lesions essentially like those in patients have been produced in rabbits. Organisms have been reisolated from the heart blood, the lymph glands or the spleen of rabbits, and similar lesions reproduced by several successive animal passages. The lesions produced in rabbits resemble those in persons, in primary localizations, progression and extent.

ABSTRACT OF DISCUSSION

DR. E. C. ROSENOW, Rochester, Minn.: I have been greatly interested in Dr. Bargen's results. The way his organism elects the colon is most striking. Instances occurred in which the colon revealed thousands of hemorrhagic lesions, when few or no lesions could be found elsewhere. Arthritis and appendicitis never developed, a fact in sharp contrast to the high incidence of arthritis following injection of similar cultures from cases of arthritis, and of appendicitis following injection of a streptococcus or mixture of gram-negative bacilli and streptococci, isolated from the appendix in acute appendictis. In the latter experiments, lesions of the small intestines occurred less commonly, particularly in Peyer's patches, but the large bowel was almost never affected. Lesions of the colon occur only rarely following injection of streptococci from various sources; and, when they do occur, lesions of the small intestines are nearly always present also. Occasionally localization in the large bowel occurs at a certain grade of virulence, when streptococcal strains are passed successively through animals. A green-producing streptococcus isolated from patients with intestinal influenza was found to have marked affinity for the intestinal tract. Dr. Bargen's striking results illustrate anew the importance of strict attention to technical details. Failure to detect the causative diplococcus followed direct plating methods, whereas partial tension cultures in tall tubes of glucose brain broth, which afforded a gradient of oxygen tension, and direct injection of these primary mixed cultures sufficed to isolate what would seem to be the causative organism of chronic idiopathic ulcerative colitis.

SYSTEMIC INFECTION COMPLICATING PURULENT MIDDLE EAR DISEASE *

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NEW YORK

Following a preliminary report in February, 1915,[1] there is here presented a detailed study of seventy-five cases of systemic infections complicating or accompanying middle ear disease. The cases are limited to those which came to operation, so that the pathologic conditions presented may be studied in relation to the clinical course, laboratory findings and roentgen-ray examinations. These observations lead to a definite grouping of the cases, each group being a distinct clinical entity, at once defined and comprehensible. Not only does the reclassification of these systemic infections, based on observed pathologic changes, make diagnosis more exact; but it also furnishes us with a more logical basis for the therapy and the management of the given case belonging to one or the other group. It will likewise clarify, and in the future obviate, the great amount of confusion evident in the current literature, wherein case reports of typical and atypical sinus thrombosis and the discussion thereof are treated in a flouncdering manner, with no attempt at the explanation of the underlying cause for the case's being atypical or typical. In a like manner, it brings us to the realization that each case is typical for the group to which it naturally belongs and, at the same time, atypical when contrasted with a case of the other group.

All cases of systemic infections fall into two groups. Group 1 consists of those which occur subsequent to purulent middle ear disease, and Group 2, those which accompany the original mastoidal infection.

SYSTEMIC INFECTIONS SUBSEQUENT TO PURULENT MIDDLE EAR DISEASE

The cases in Group 1 occur subsequent to that type of infection which results in the production of the coalescent variety of mastoiditis. After a general systemic disease or an acute rhinopharyngitis, or coincident with the exanthems, the middle ear and the mastoid process may become the seat of a purulent invasion, and there are presented signs and symptoms that we have come to recognize as typifying an acute mastoiditis. At operation there is found a coalescence of the mastoid cells, resulting from the obliteration of the bony intercellular walls. The mastoid process becomes the seat of an abscess cavity, filled with pus and detritus. A roentgen-ray examination in such a case will distinctly reveal the destruction present prior to operation.

TABLE 1.—*Analysis of One Hundred and Twenty-Six Cases of Coalescent Mastoiditis, with Details of Pathologic Changes*

	Number	Per Cent.
Subperiosteal abscess	25	20
Perisinal abscess	34	27.5
Sinus thrombosis	25	20
Extradural abscess	6	4
Facial paralysis before operation	5	3
Secondary lesions	18	14.6
Meningitis	5	3
Labyrinthitis	1	0.5
Deaths	11	9

The pathologic conditions present in this type of mastoiditis are dependent on three factors: infection, stagnation of the pus in the mastoid cells, and pressure necrosis. The extent of the pathologic changes is dependent on two factors: the protective forces of Nature and the duration of the disease.

TABLE 2.—*Analysis of Details of Findings in Twenty Cases of Acute Coalescent Mastoiditis Superimposed on Otitis Media Purulenta Chronica*

	Number	Per Cent.
Subperiosteal abscess	3	15
Perisinal abscess	5	25
Sinus thrombosis	6	30
Extradural abscess	1	5
Brain abscess	2	10
Meningitis	3	15
Secondary lesions	2	10
Deaths	5	25

As the extent of the coalescence increases, Nature endeavors to limit the progress of the destruction by calling into play her protective forces. This results in the granulations observed at the outskirts of the infected area. When the case comes to operation later in the course of the disease, the lesion will be found to have extended beyond the confines of the mastoid process, and to have involved in its progress some portion of the inner mesial boundary. There is then presented what

* From the otolaryngologic department of Beth Israel Hospital.
* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Kopetzky, S. J.: Factors Concerned in Atypical Sinus Thrombosis, Laryngoscope, March, 1915.

we term an extradural or a perisinal abscess, the terminology depending on the area of the inner table destroyed. The protective granulations will then be found on the sinus or dura, which are bathed in the purulent mastoidal contents.

In cases coming to operation still later in the course of the disease, and wherein a dehiscence has been created

Fig. 1.—Mastoiditis coalescens; no bony elements in view; the field shows a mass of cells and detritus.

in the inner table overlying the sinus, the pressure of the pent up pus and detritus is exerted directly on the wall of the sinus. With the slowing of the blood stream that results from the compression of the pliable sinus wall, there occurs an extension of the purulence into the sinus itself, with the consequent production of an infected thrombus. Finally, there are cases in our series which came under observation so late in the course of the disease that the thrombus was found to have broken down before operation, with a resulting necrosis of the vessel wall: the interior of the vessel and the interior of the mastoid process were found in continuity, the whole constituting one abscess cavity embraced within the mastoid process.

Tables 1 and 2 are an analysis of the pathologic findings in 146 consecutive cases of coalescent mastoiditis.

It will thus be seen that the outstanding characteristic of this type of lesion is the gradual progression of destruction by pressure necrosis, associated with a continued attempt on the part of Nature to place barriers across its path of advancement. It is in this sense that we view the extradural abscess, the perisinal abscess and, finally, when the brain is invaded, the encapsulation of the brain abscess that is presented by this type of mastoidal infection.

After the sinus has been invaded and the thrombosis definitely established, the characteristic clinical picture is evolved. There are the septic temperature, following the period of normal or slightly elevated temperature, the chills, the positive blood culture and the secondary lesions.

The thrombosis in the blood vessel is, in a sense, secondary to the mastoidal involvement. The blood vessel is reached because operative measures, for various reasons not under the surgeon's control, failed to

TABLE 3.—*Thirty-One Cases of Mastoiditis Coalescens with Sinus Thrombosis Developing Subsequent to the Mastoidal Involvement*

Mastoid Lesion	Number	Perisinal Abscess	Thrombus Found	Blood Culture			Secondary Lesions	Recovery	Death
				Positive	Negative	Not Recorded			
Acute mastoiditis.....	20	17	18	8	7	5	10	14	6
Acute exacerbation of otitis media purulenta chronica.....	9	8	7	6	2	1	5	5	4
Anomalies of mastoid (absent mastoid).....	2	0	2	0	1	1	1	1	1

interrupt the extension of the purulent process beyond the boundaries of the mastoid; and the systemic infection is thus to be considered as a late manifestation of the disease in the middle ear.

Fig. 2.—Necrotic sinus plate with granulations, from a case of mastoiditis coalescens.

In Table 3, which is an analysis of the thirty-one cases of systemic infection occurring subsequent to the incidence of a coalescent mastoiditis and which have been selected from the 146 cases tabulated above, we can visualize the features that distinguish this type of infection.

A perisinal abscess was found to precede the thrombosis of the sigmoid sinus in twenty-five of the thirty-one cases. This clearly indicates that the mode of sinal invasion is one that occurs by contiguity with a progressively destructive lesion.

In twenty-seven instances, the thrombus was demonstrated and recorded. In the remaining four cases, there is no record to show whether or not a thrombus was demonstrated, the charts merely stating that an operation was performed on the sinus and the jugular vein for the relief of a septic condition.

In less than 50 per cent. of the cases, the blood culture was positive. In ten of the cases, or approximately one third, the blood culture was negative. In seven cases, there is no record of the result of the blood culture.

In the systemic infections following the coalescent mastoiditis, one is apt to encounter a negative blood culture, for, since the disease is characterized by the constant setting up of barriers against the infection, Nature has probably established its protective forces for

Fig. 3.—Thrombotic vein in the mucous membrane of hemorrhagic mastoiditis; the specimen stained with Weigert stain to bring out the fibrous elements in the thrombus (high power).

the limitation of the pyogenic organisms within the area of sinus involved by the lesion. Micro-organisms are thus prevented from gaining access to the general blood stream.

Sixteen of the cases, or approximately 50 per cent., exhibited secondary lesions. Recovery was obtained in twenty cases, and death resulted in eleven.

Summarizing the picture of the systemic infections occurring subsequent to purulent middle ear disease, we assert that they are, in most instances, avoidable by operation on the mastoid process before the disease has extended to and involved the lateral sinus, and that most cases of systemic infection that follow a mastoiditis of the coalescent variety are due to failure to eradicate the disease before it has reached the inner table. When once the sinus has become infected and is the seat of a thrombus, the chances of recovery following appropriate treatment are good, because one has evidence of Nature's aid in combating the spread of the infection to the general blood stream.

SYSTEMIC INFECTIONS ACCOMPANYING PURULENT MIDDLE EAR DISEASE

In contrast to the foregoing type of systemic infection, the second group occurs simultaneous to the involvement of the mastoid disease. The etiology, pathology, clinical picture and therapy are distinctly different from those discussed in connection with the infections that are the sequelae to mastoidal disease.

TABLE 4.—*Etiology of Hemorrhagic Mastoiditis*

	Number
Sore throat (including tonsillitis)	10
Influenza (epidemic and type commonly termed grip)	23
Chickenpox	1
Measles	2
Nasopharyngitis ("colds")	2
Bronchopneumonia	2
Illness following tonsillectomy	2
Unknown	2

Table 4 is an analysis of the etiologic factors concerned in the production of this type of mastoiditis and systemic infection in forty-four cases. It will be noted that 75 per cent. of the cases followed either a sore throat or epidemic influenza. The remaining 25 per cent. are divided among chickenpox, measles, head colds, bronchopneumonia and illness following removal of the faucial tonsils. In two cases, the etiology could not be determined.

In all cases, a hemolytic organism is the offending factor. The mode of invasion takes place through the blood stream.

I first described this type of mastoiditis, in 1915, as the hemorrhagic mastoiditis, in contradistinction to the coalescent mastoiditis, the name designating the pathologic characteristic of the lesion. This type of mastoidal infection does not affect the bony intercellular walls. These remain intact throughout the course of the disease. At first, I thought that the finding of these intact walls indicated an early stage of the coalescent mastoiditis. Within the last ten years, however, observations were made in cases of this type that came to operation late in the course of the disease, in all of which the bony intercellular walls were found to be unaffected and as intact as in cases coming to operation earlier in the course of the disease. This element is characteristic, and furnishes diagnostic data of extreme importance.

The mucous membrane lining the mastoid cells is thickened and swollen. This swelling is distinctly different from the gelatinous edema found in the coalescent type of mastoiditis. The membrane is engorged and contains arteries, veins and capillaries which, under the microscope, are found distended and filled with blood. On closer examination, the venules of the mucous membrane are found to be the seat of small thrombi.

At operation, the mucous membrane is intensely red, and bleeds easily when touched. It is from this that the lesion derives its name. In contradistinction to the coalescent mastoiditis, there is no coalescence of cells. The cell spaces contain no pus or detritus, but, in the majority of instances, are filled with a blood tinged serum or, in some cases, with blood.

It will thus be seen that in this type of infection we have not the factor of pressure necrosis to deal with. The lesion is in the minute vascular channels of the mucous membrane and not in the mastoid cells. The disease attacks the venous supply of the mucous membrane of the entire mastoid process, and does not

advance from the antrum toward the periphery of the mastoid, as is the case with the coalescent mastoiditis. Consequently, Nature's protective forces are not to be found within the mastoid process in the form of granulations, but are to be looked for within the vessel walls, where they assume the form of small thrombi, which endeavor to localize the infection to that portion of the circulation which is embraced by the mastoid process. Rarely do we find extradural abscesses or perisinal abscesses. When these do occur, they are the result of a suppuration and breaking down of the infected thrombi in the neighborhood of the dura or sinus.

Table 5 illustrates the pathologic condition found in the forty-four cases of hemorrhagic mastoiditis that have come under our observation. A perisinal abscess was found in only 9 per cent. of these cases, in contradistinction to its occurrence in 25 per cent. of the cases in Table 1, and 27.5 per cent. of the cases in Table 2. No extradural abscesses were encountered here, whereas they were present in 5 per cent. of the cases in Table 1 and in 4 per cent. of the cases in Table 2.

Extension of the disease occurs by the extension of the thrombosis and not by the increase in the amount of cellular destruction. Thus, when the thrombi have invaded the vessels of the bony intercellular walls, there occurs a condition that is known as osteothrombotic phlebitis. Still further extension of the thrombosis may result in the production of a brain abscess of the acute variety, wherein there is no limiting membrane, or, if the progress is toward the sinus, in a sinus thrombosis. The vessel wall in these cases will be normal in appearance and the sinus plate unaffected. Granulations are never observed covering the sinus, for there is no need of Nature's protecting the blood vessel at a point where it is not attacked. The mode of attack is through the small vessels that empty into the lateral sinus; and Nature's protective action can be seen in the shape of a thrombus that originates at the opening of the small vein. It is in this type of sinus thrombosis that one frequently encounters the mural thrombus.

The systemic involvement in the hemorrhagic mastoiditis occurs as soon as the mastoid becomes infected. The body reacts to the infection within the blood vessels. With the progression of the thrombosis to the bony intercellular walls, small portions of the infected thrombus pass directly into the general blood stream and give rise to a general bacteremia. The progression of actual thrombosis into the larger blood vessel results in a sinus thrombosis with its accompanying systemic manifestations.

The clinical picture of the acute hemorrhagic mastoiditis is a stormy one. The temperature ranges are high, with abrupt rises and falls. The patient is intensely prostrated, and the ear is painful, usually evincing points of tenderness over the mastoid process. This picture is present at the onset of the disease, and continues throughout until relieved by adequate therapy. Chills are found when the disease has extended to the vessels in the bony intercellular walls, or beyond. In my experience, this lesion has been found more frequently in the young than in the old.

TABLE 5.—*Analysis of Forty-Four Cases of Hemorrhagic Mastoiditis, Illustrating Details of Findings Encountered*

	Number	Per Cent.
Perisinal abscess	4	9
Sinus thrombosis	15	34
Osteothrombotic phlebitis	7	16
Secondary lesions	10	24
Meningitis	2	5
Deaths	7	16

On otoscopic examination, the membrana tympani is rarely found bulging, owing to the small amount of secretion present in the middle ear. The drum, however, is found to be engorged, owing to the distention of the blood vessels in the mucous membrane lining the inner side of the membrana tympani, coincident and concomitant to the general engorgement of the regional blood vessels. In the epitympanic space, in which there are reduplicated folds of mucous membrane, the engorgement of the blood vessels causes these folds to increase markedly in size. This may produce a protrusion of the drum in the region of Shrapnell's membrane; but the bulge so produced should not be incised,

Fig. 4.—Specimen from patient with hemorrhagic mastoiditis; bony cell walls intact; intense hemorrhagic engorgement of mucous membrane with round cell infiltration.

for a twofold reason: There is danger of thus causing a permanent perforation in the region of Shrapnell's membrane, with a resultant loss of function due to the formation of scar tissue; or a secondary infection may be produced from without which will have its primary seat in this wall of the attic. Thus, in spite of the protruding area at Shrapnell's membrane, the paracentesis should be made in the posterior inferior quadrant of the drum.

On paracentesis, a serosanguineous exudate escapes through the opening in the drumhead. Very often myringotomy results in a discharge of blood from the engorged capillaries and veins that are incised during the procedure. There is not found the characteristic drooping of the posterior superior portion of the canal wall that obtains in the coalescent type of mastoiditis. Therefore, from the otoscopic picture alone, one is apt

to be deceived as to the character and the severity of the infection.

A roentgen-ray picture of this type of mastoiditis will show intact intercellular walls throughout the entire course of the disease, regardless of the duration of the

TABLE 6.—*Extent of the Pathologic Changes in Forty-Four Cases of Hemorrhagic Mastoiditis*

Number of cases presenting severe sepsis		44
Thrombosis limited to veins of mucous membrane	20	
Thrombosis extending beyond mucous membrane	24	
Osteothrombotic phlebitis	7	
Sinus thrombosis	15	
Hemorrhagic nephritis	2	

lesion. As there is rarely associated any inflammation of the periosteal covering, there will be no haziness discernible. When the roentgenogram of the diseased side is compared with that of the healthy side, there will be noted some "clouding" of the cells of the affected mastoid. Therefore, one must estimate the absence of broken down cell walls in connection with the known pathologic changes of this lesion, and especially with the clinical history. The roentgen-ray picture per se is of no diagnostic value and furnishes no indication as to the extent of the lesion or as to the type of surgery required in this type of mastoiditis.

It will thus be seen that every case of hemorrhagic mastoiditis is a systemic infection at its onset, and that it is only the severity of the infection that is dependent on the extension of the original pathologic condition. Thrombosis is present as soon as the disease sets in but, when limited to mucous membrane, does not produce a bacteremia.

Table 6 shows that, of the forty-four cases, all were of the septic type, with high temperature and severe prostration. Of these forty-four, twenty were cases in which the vessels in the mucous membrane alone were involved. In the remaining twenty-four, the thrombosis had extended beyond this point, involving the veins in the intercellular walls in seven instances, the lateral sinus in fifteen, and producing a hemorrhagic nephritis twice. In two of the cases wherein the sinus was found thrombosed, a meningitis developed.

The blood count in the cases is very instructive. A progressive diminution in the percentage of hemoglobin is noted from day to day. Likewise, successive counts of the red cells show a gradual reduction in the total number with each succeeding count. The leukocytosis varies and stands in definite relationship to the polymorphonuclear count. As the disease progresses, the percentage of polymorphonunclear cells remains stationary or becomes higher, while the total leukocytosis shows a tendency to fall.

The blood culture is found positive in approximately 75 per cer cent. of the cases wherein the thrombosis has extended beyond the vessels of the mucous membrane. In Table 7 is shown the number of times in which the blood culture was positive in those cases in which either an osteothrombotic phlebitis or a sinus thrombosis was present. Sixty-six per cent. of the cases of sinus thrombosis gave a positive blood culture, while 100 per cent. of the osteothrombotic phlebites had a positive culture. In all instances, the hemolytic streptococcus was isolated from the blood stream.

The disease may run its course and subside after the drum has been incised. The temperature falls by lysis and eventually approaches normal. In such cases, the hemoglobin percentage, the total number of red cells and the total leukocytosis remain stationary.

More often, however, the disease assumes its characteristic virulence and soon presents metastatic lesions. The patient may come under observation because of an inflamed joint or a suspected pulmonary condition, and then the examination of the blood and a thorough study of the aural condition and the clinical history reveal the cause of the metastasis. The patients all have the characteristic pyemic temperature, the scant otorrhea and the lowering of the hemoglobin percentage and of the number of the red cells. Such a case presents indications requiring immediate surgical intervention.

The surgery on the mastoid process is not done here, as in the coalescent mastoiditis, to provide egress for pent up pus and drainage for the purulent secretion from the middle ear, but is performed to remove the mass of infected thrombi that are lodged in the vessels of the hemorrhagic mucous membrane. If the operation is properly timed before these little thrombi reach and involve the larger vessels, the results of surgery are striking. The temperature at once changes its character. The abrupt rises and falls cease almost immediately after operation, and a normal curve is soon reached.

In the cases of osteothrombotic phlebitis, all that is required is a thorough exenteration of the mass of infected thrombi. The blood culture rapidly becomes sterile, and the temperature drops.

Often, however, because of failure to comprehend the class of case that is presented, the larger blood vessels become involved. This cannot usually be determined at the primary operation on the mastoid, as the sinus wall, if exposed, is invariably normal in appearance. After the mastoid process has been exenterated, however, the temperature continues to be septic, and the hemoglobin and the red cell estimation show a progressive decrease. The total leukocytosis gradually diminishes in amount, and the number of polymorphonuclears increases or remains stationary. The blood culture will show, in the majority of cases, a growth of *Streptococcus hemolyticus*. There is now indication for further surgery on the blood vessels, and the internal jugular vein should be resected, and the sigmoid portion of the lateral sinus obliterated.

This disease is very often bilateral, and a continued sepsis after the mastoid processes have been thoroughly cleaned out requires keen judgment as to which side shall be the site for the jugular resection and sinus obliteration. We usually resect on the side that presents the older lesion, the more characteristic lesion, or in which the other signs, such as the bruit in the jugular or the appearance of the eyegrounds, give data that make us suspect one side rather than the other. Occasionally, a quantitative estimation of the number of

TABLE 7.—*Blood Culture in Hemorrhagic Mastoiditis*

Number of times blood culture was positive		17
Thrombosis limited to mucous membrane	0	
Osteothrombotic phlebities	7	
Sinus thrombosis	10	

organisms recovered in cultures taken from the two sinuses at the same time has been attempted in trying to determine the side to select for operation on the jugular. It is assumed that a preponderance of the growth will occur in the culture from the side in which the thrombus is located. This method may be tried, but too much reliance should not be placed on it. When

all methods have been tried and it has been found impossible to localize the more advanced lesion to one or the other side, it should be remembered that both lateral sinuses have been obliterated without causing death.[2]

TABLE 8.—*Type of Surgery Indicated in Hemorrhagic Mastoiditis*

Number of cases cured by simple mastoid operation		29
Thrombosis limited to mucous membrane	20	
Osteothrombotic phlebitis	7	
Complicated by hemorrhagic nephritis	2	
Number of cases requiring operation on the blood vessels		15
Thrombosis limited to mucous membrane	0	
Osteothrombotic phlebitis	0	
Sinus thrombosis	15	
Recoveries	8	
Deaths	7	

Table 8 is an estimation of the type of surgery indicated in the various stages of hemorrhagic mastoiditis. Of the forty-four patients, twenty-nine were cured by mastoid operation alone. In these twenty-nine are included all the cases—twenty in number—wherein the thrombosis was confined to the mucous membrane, as well as all the cases of osteothrombotic phlebitis, each of which had a positive streptococcemia. The two cases complicated by hemorrhagic nephritis were cured by the operative procedure on the mastoid process, plus proper medical attention to the renal condition, and these also are included in this computation. All the cases of sinus thrombosis required operation on the blood vessels. In each of them, the internal jugular vein was ligated and then cut across, and the sigmoid sinus was obliterated. Eight of these fifteen patients recovered, while seven died.

The cause of death, as illustrated in Table 9, was sepsis in five of the cases and a complicating meningitis

TABLE 9.—*Causes of Death in Hemorrhagic Mastoiditis*

Number of deaths		7
Thrombosis limited to mucous membrane	0	
Osteothrombotic phlebitis	0	
Sinus thrombosis	7	
Due to sepsis	5	
Due to meningitis	2	

of suppurative character in two. These deaths occurred in cases wherein the thrombosis had invaded the lateral sinus.

After the surgeon has eliminated the network of infected vessels from the mastoid process and, when necessary, has excluded the lateral sinus from the general circulation, it is essential that he sustain the patient by supplying him with the antibacterial elements of the blood and by restoring the red blood cells and the hemoglobin that the hemolytic organisms have destroyed.

When the hemoglobin percentage has dropped to 55 or the total leukocytosis to 10,000, transfusion is indicated. The patient should be given whole blood. Careful estimation of the hemoglobin and the red cells should be continued and, if a decrease is again noted which approximates the foregoing figures, transfusion is again indicated despite the clinical picture. If necessary, a third transfusion is given. The best results are obtained when a different donor is used each time. In most instances in which the condition is recognized, the simple mastoidectomy suffices, and the blood picture assumes its normal characteristics after operation. Rarely will it be necessary to give more than two or three transfusions to carry the patient toward safety. Transfusions are indicated by the diminution in the red cells, the leukocytes and the hemoglobin percentage, and not by the findings in the blood culture or the extent of the lesion in the mastoid process.

The prognosis is demonstrated in Tables 8 and 9. When the thrombosis was limited to the mucous membrane, the percentage of recoveries was 100. This held true also for the cases of osteothrombotic phlebitis. When the thrombosis had extended to the lateral sinus or beyond it, we obtained 53.33 per cent. of recoveries.

HISTORICAL NOTE

In 1902, Körner [3] recognized the fact that there were cases of mastoiditis associated with pyemia wherein the sinus was unaffected. To these he gave the name,

TABLE 10.—*Differential Diagnosis of Groups 1 and 2*

	Group 1	Group 2
Etiology	Nasopharyngitis; systemic disease; exanthems	Septic sore throat; epidemic influenza
Pathology	Coalescence of the mastoid cells, with progessive destruction of bony intercellular walls, approaching the sinus by contiguity and first producing a perisinal abscess; pus and detritus in mastoid process	Thrombosis of small veins in mucosa lining mastoid cells, with extension of thrombosis to veins in intercellular walls and then to lateral sinus; intercellular walls intact; no pus in mastoid; marked engorgement of mucosa
Appearance of Sinus Wall	Covered with granulations; necrotic; sinus plate destroyed; often sinus is found to be open and in communication with mastoid	Normal in appearance at all stages of the disease
Clinical Picture	After mastoidectomy, there is an interval of time before temperature becomes septic; then follow signs of sepsis	Case is septic even before paracentesis; stormy course, high temperature and prostration; at times, secondary lesions from outset
Otoscopic Findings	Profuse discharge, which pulsates; drooping canal wall; bulging drum	Red drum; bulge in Shrapnell's membrane due to congestion of reduplicated folds; scant otorrhea, which is serosanguineous; no drooping of canal
Roentgen-ray Picture	Shows destruction and coalescence of mastoid cells and absence of intercellular bony walls; subsequent plates show progression of destruction; general clouding and haziness	Shows intact bony intercellular walls throughout entire disease; slight clouding of mastoid process due to bloody serum in cells
Time When Sepsis Develops	Only when the lateral sinus has become thrombosed does the systemic infection become manifest	As soon as the mastoid process becomes involved, a general sepsis is present; a bacteremia occurs when the thrombosis has extended beyond the veins in the mucous membrane
Type of Infecting Organism	Any pyogenic organism	A hemophil, usually Streptococcus hemolyticus; in our cases, the latter was found whenever blood culture was positive
Red Cell and Hemoglobin	Depends on the type of invading organism; when it is a hemophil, reduction in number of cells and percentage of hemoglobin; this occurs only after the sinus has become the seat of thrombosis	Both are reduced as soon as the mastoid is involved, regardless of whether or not a bacteremia is present

"otitische Pyämie ohne Sinusphlebitis, oder Osteophlebitis Pyämie." He stated that the pyemia resulted from the thrombosis of the small veins of the diseased mastoid process, particularly in the bony cell walls, and

2. Tobey, H. G.: Transactions of the Twenty-Ninth Annual Meeting of the American Laryngological, Rhinological and Otological Society, 1923, p. 6.

3. Körner: Die otitischen Erkrankungen des Hirns, der Hirnhaute und der Blutleiter, Bergmann, 1902.

not from the thrombosis of the lateral sinus. He likewise credits Schwartze [4] with having been the first to describe the condition, while he tabulated its clinical history. In 1917, Beck,[5] discussing the surgical pathology of mastoiditis, designated two types of acute lesions: one he called the thrombotic type, the other the cell-route type. Undoubtedly, the so-called thrombotic type of Beck is identical with what is designated in this paper as hemorrhagic mastoiditis. Dennis [6] quotes Shambaugh as recognizing the factor played by the involvement of the small veins leading from the mastoid process to the sinus in producing a characteristic fluctuation of temperature when no thrombosis is present in the lateral veins; and Day, Dench, Frazier, Tobey [7] and others have reported cases that clearly belong in the group of hemorrhagic mastoiditis with systemic infection. None of these observers, however, recognized the distinguishing features of this lesion clinically and roentgenologically, its characteristic blood picture or the pathogenesis in relation to the systemic infection. Since my first report in 1915, I have endeavored to establish these two groupings of mastoidal infections and, by reports made in 1920 and the summary that comprises the material reported in this paper, to stress particularly the significance of the pathologic condition of hemorrhagic mastoiditis and its resulting clinical manifestations.

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ABSTRACT OF DISCUSSION

DR. JOHN F. BARNHILL, Indianapolis: No better presentation of the pathology and causation of systemic infections from the ear has, so far as I know, ever been given. This paper makes clear several points connected with sinus infection and sinus thrombosis that have greatly needed elucidation. I thoroughly agree with what has been said concerning the mode of origin and the pathology of this disease, which in its clinical manifestations is often quite obscure. The grouping of cases, while correct as to pathology, is, I believe, unfortunate if considered from the standpoint of a clear understanding. The term "coalescent mastoiditis," applied to the first group, is confusing, and certainly does not clearly picture the destruction of bone that is always taking place, and if unhindered by Nature's barriers or surgical intervention will lead, inevitably in many cases, to the opening of a direct pathway for infection from the mastoid to the adjacent sinus. The word "coalescent" seems too mild. It does not sufficiently carry the thought of destruction and possible disaster. Again, in Group 2 the term "hemorrhagic mastoiditis" is employed. In the sense in which the author uses it, it will be too often wrongly interpreted. One is led by the term to look for symptoms that would help in diagnosis and not for a condition found only at operation. The author states that all cases may fall properly in Group 1 or Group 2. Most cases may do so, but I cannot agree that there are none that are not outside Group 1. At any rate, there can be no question about the fact that in Group 1, in which there are suppuration and bone destruction with final involvement of the sinus, cases are not uncommonly found in which the accompanying symptoms are so clearly atypical that diagnosis is in doubt until time and every laboratory aid have been employed to clear up the cause of what is manifestly a dangerous and mysterious illness. Day, Lewis, Welty and others have reported cases of this kind. I myself have had three undoubted cases that were clearly atypical, though falling in Group 1 of Dr. Kopetzky's classification. I agree entirely with the author that many cases of blood stream infection occur from the diseased mastoid without the presence in the mastoid of broken down bone and accumulated products of suppuration. There is, as he states, an infection of the venules and an extension of thrombi from these vessels into the larger blood streams. The mischief takes place almost at the same time as the primary infection of the middle ear. The mastoid cells are not broken down, and pus is seldom found in the mastoid structures at the time of operation, even though the symptoms that justified the operation were severe. For this reason, physicians who witness mastoid surgery in the class often express the belief that, since no pus or necrosis was present, the operation seemed wholly unnecessary. Such, however, is not the case, since early operation often gives most brilliant and gratifying results. In all groups and types of systemic infection from the mastoid, early diagnosis is entirely essential to cure. This is well shown in Dr. Kopetzky's tables. Fully 50 per cent. of recoveries result if diagnosis is made early and operation likewise, whereas it has not been proved that any patients recover without operation. Every case of ear disease in which symptoms of systemic infection arise is one to be closely watched. A simple mastoid infection that is uncomplicated never, I believe, gives rise to the high temperature likely to be present in sinus infection and sinus thrombosis. The laboratory must therefore be frequently employed as Dr. Kopetzky has outlined, in all suspected cases, and the presence of any intercurrent disease, as malaria, typhoid or pneumonia, should be discovered, if present. If all the aids to diagnosis now at the command of the surgeon are used, a correct diagnosis may usually be made even in obscure cases; and when early made, immediate surgical intervention will terminate in cure in the majority of instances.

DR. CULLEN F. WELTY, San Francisco: In two cases of hemorrhagic mastoiditis, a large pneumatic mastoid was found filled with blood. I do not remember the infecting organism, and the patients recovered in the usual manner. The title of this paper is "Systemic Infection." I wish to confine my remarks to infection following mastoid operation. Should there be fever following mastoid operation, one of three or four conditions is present: In the order of frequency: 1. A wound infection. By wound infection I mean that there is a slight rise of temperature following the operation that does not reach more than 100 F. and subsides in a day or so. 2. After a day or so the temperature begins to increase from day to day with some pain, and one will frequently find that one has not uncovered all the cells. If left alone, they will break through or result in an extradural abscess and possible sinus involvement. 3. If there is a rise of temperature that increases rapidly after operation, going to 103 or 104 F., it is usually erysipelas or some of the modified forms of streptococcus infections. It can be easily distinguished by a brawniness of skin and sometimes by the characteristic lines of demarcation. In several instances, I have seen measles, scarlet fever and mumps develop at this time. They must always be thought of. 4. Sinus thrombosis, with a rapidly increasing temperature accompanied by chills and sweat with distinct remissions, require that one look to the sinus as the cause of the unusual manifestation. The blood stream may or may not be infected, but one must bear in mind that if the blood stream is infected, it may be infected by any other process as well; and if the other conditions that would give such a picture cannot be eliminated, one can begin to talk about the laboratory findings; otherwise they are of little importance. 5. I will not attempt to give a classical history of meningitis and brain abscess, because it would take too much time. This classification is based on my own reasoning, covering more than 400 acute mastoid operations without a single death.

DR. FRANK R. SPENCER, Boulder, Colo.: The point I should like to emphasize is the value of the roentgen ray in any case of mastoiditis. The roentgenologists and otologists have classified them as mild, moderate and severe. Several years ago I had the good fortunate to review 100 operative cases of mastoiditis and correlate the roentgen-ray findings with the pathologic changes found at the time of operation. In 85 per cent. of the cases, the roentgen ray was an invaluable help. On the other hand, in 15 per cent. it was quite mis-

4. Schwartze: Chirurgische Krankheiten des Ohres, 1885, p. 402.
5. Beck, J. C.: Tr. Am. Laryngol., Rhinol. & Otol. Soc., 1917, p. 71.
6. Dennis, F. L.: Tr. Am. Laryngol., Rhinol & Otol. Soc., 1923, p. 379.
7. Tobey: Tr. Am. Laryngol., Rhinol. & Otol. Soc., 1923, p. 6.

leading. It simply goes back to the statement which has been made repeatedly before this section, that we must not depend too much on the roentgen ray, but must correlate the clinical findings with the roentgen-ray findings, in order that we may not be misled in our judgment.

DR. HARRY BOYD-SNEE, South Bend, Ind.: My experience is concerned with 320 cases of acute suppurative otitis media and coincident temporal bone involvement. Direct intracranial extension occurred in very nearly 17 per cent. of the patients, but only 10 per cent. of those developed thrombophlebitis as a supervening complication. The bacteriologic factor, as concerned the entire group, was found culturally to have been the streptococcus organism. Dr. Kopetzky's description of the clinical picture of the disease as he observed it in the hemorrhagic type coincides with what I have classified as uncomplicated streptococcic osteomyelitis of the temporal bone. The histopathologic findings in the material recovered through an operative wound, as far as the bony tissue was concerned, were identical with his findings. My operative experience in treating this particular type of disease of the temporal bone has revealed to me that the infectious process has not been found limited to the mastoid; involvement of the squamous and petrous portions occurred frequently.

DR. EMANUEL LIBMAN, New York: The subject of general infections in cases of mastoiditis, by way of a so-called osteophlebitis, is not clear. Koerner introduced the conception in order to explain cases of general infection in which he could not find a thrombosis of the lateral sinus, but he never succeeded in demonstrating that such a condition really exists. It is to be remembered that, as Dr. Celler and I pointed out, a general infection may also arise from involvement of the meninges. Not only *Streptococcus hemolyticus,* but also anhemolytic streptococci, *Streptococcus mucosus* and, less commonly, other bacteria may infect the blood from a thrombotic lesion of the sinuses. We have not observed any instances of general infection by a bile-soluble pneumococcus. We have, however, repeatedly found this organism in the blood in cases of meningitis of otitic origin. For the otologist it is unfortunate that *Streptococcus mucosus* is usually now called pneumococcus, Type III. In our experience, positive cultures can be obtained in at least 90 per cent. of the cases of sinus thrombosis. It is important to take the culture early and repeatedly. The question arises as to how to estimate the significance of a positive culture. Brieger, who believed that general infections could occur without the presence of a sinus thrombosis —that is, by way of a so-called sinus phlebitis—admitted that in 96 per cent. of the cases of general infection a sinus thrombosis was present. It is therefore important to decide whether the otologist shall guide himself by this 96 per cent. experience or by the experience of the exceptional case. It seems to me that if one finds a general infection in a case of mastoiditis, and a meningitis can be excluded, and one can be sure that the bacteremia is not postoperative, and if there is no cause otherwise in the body to explain the general infection, it is better to take it for granted that a sinus thrombosis is present. When one has, in one way or another, made up one's mind that a thrombosis is present, it does not follow that operation must be at once performed. The surgeon must determine whether or not the patient should be operated on, whether the case is so mild that one can hope for spontaneous healing, or whether, because of other conditions from which the patient is suffering, the operation is contraindicated.

DR. SAMUEL J. KOPETZKY, New York: I would be very willing to accept any other terms for naming these two types of mastoiditis provided some one will suggest terms that will answer the purpose. We already have hemorrhagic nephritis and hemorrhagic purpura, and there is no hemorrhage externally. The names are understood to be based on what one finds in the lesion. Dr. Welty says that some mastoids are bloody. These mastoids that are bloody from the beginning to the end are not the coalescent type. The bone decalcifies and breaks down, and with pus and pressure there is a progressive type of lesion. I will not discuss the type that Dr. Welty speaks of in which cells are left (I take it for granted that nobody in this section leaves any) and there is serious infection following operation. I am discussing distinct pathologic entities and trying to show in a comprehensive manner so that we may revalue the different cases and place them in opposing columns, the better to understand complications, and more intelligently handle them. I have the greatest amount of respect for Dr. Libman's work and his method of diagnosis, which has made a great deal of subsequent work on systemic infection possible; but his restatement of an outworn controversy is not here under discussion. In the cases I am reporting today I am giving that which I have seen myself. All my cases of the so-called hemorrhagic type presented a *Streptococcus hemolyticus* infection. There is no argument here but that anybody may have from 100 to 200 cases of mastoiditis without operation. However, I am talking about the one type of mastoid infection which is followed by an invasion of the blood stream, which can be obviated by timely operation on the mastoid process; and, when the condition is recognized promptly, the prognosis is good. The other type—the septic—gives a positive blood culture from the start, with a positive clinical condition that must be handled differently.

THE TREATMENT OF BLUE DOME CYST *

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The term "blue dome cyst" was first employed to designate a benign cyst filled with straw-colored fluid that showed a blue color when cut down on. Subsequent investigations have shown that all cysts of the breast excepting the galactoceles are bluish, regardless of the fluid content, though there may be some variation in shade and intensity of color, depending on the thickness of the wall or the degree of cloudiness of the fluid. The expression is still used in its original sense, and means a retention cyst resulting from blockage of the duct in association with involutional changes, or with an hypertrophy and abnormal secretion.

In the process of involution, a portion of the breast may fail to atrophy, and, with the continued activity of the epithelial cells lining the ducts and alveoli, a cyst may be formed. Subsequently, the epithelium of the structures outside the cavity may atrophy either through pressure or in the process of delayed involution, while the cyst itself may finally cease to grow or burst and disappear.[1] Cysts may arise also in virginal breasts or in breasts that have functioned, in association with general or localized hypertrophy with parenchymatous excess and pseudosecretion.[2]

The blue dome cyst, therefore, is not a true neoplasm. Furthermore, it is not precancerous, and the breast that is the seat of involutional or hypertrophic change with production of such cysts is no more likely to develop cancer than the breast that is grossly and microscopically without these changes.[3] Local treatment, accordingly, is not indicated except for relief of the patient's mental distress, occasioned by the visible and palpable tumor.

PAPILLOMATOUS CYST

Unfortunately, the practical problem is more complicated, owing to the impossibility of making a positive

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* From the division of surgical pathology, Department of Surgery, University of California Medical School.

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1. Bloodgood, J. C.: Lesions of the Female Breast in Binnie's Regional Surgery **1**: 580.
2. Bartlett, E. I.: Breast Hypertrophy, Surg., Gynec. & Obst. **38**: 798 (June) 1924.
3. McFarland, Joseph: Residual Lactation Acini, Arch. Surg. **5**: 1 (July) 1922. Bloodgood, J. C.: The Pathology of Chronic Cystic Mastitis, ibid. **3**: 445 (Nov.) 1921.

clinical diagnosis in all cases. In the first place, one cannot always differentiate clinically between benign solid tumor, cancer and cyst; and, secondly, even after a positive clinical diagnosis, one cannot be sure that the cyst is not the seat of a papilloma or cancer.

The papillomatous cyst may arise in exactly the same manner as the blue dome cyst, or it may result from the secretion of fluid or the escape of blood from a papilloma in an obstructed duct. Its ultimate fate may be the same as that of the blue dome,[4] but is often different, owing to the presence of the papilloma, which, sooner or later, may require surgery. That a papilloma in a duct may lie quiescent or disappear is evident when one considers the number of instances of bleeding from the nipple without subsequent development of carcinoma; but the frequent association of cancer with is malignant, but these phenomena are sometimes absent even in extensive cancerous change (Table 1, Cases 3 and 10). A buried tumor is usually a cyst or a cancer, and a spherical tumor with a smooth surface on one side is always a solid benign tumor or a cyst; but conclusions are very frequently indefinite, owing to the fact that fluctuation is not always demonstrable in cysts under 2 cm., and is sometimes erroneously attributed to growths that prove to be solid.

Aspiration has been advocated, and is so simple, so spectacular and so satisfying to the patient that it has seemed to be the real solution to the problem. It removes the visible and palpable evidence; the whole procedure can be done in the home or in the office; there is no wound or after-soreness, and in most instances there is no refilling. It has been suggested

TABLE 1.—*Record of Eleven Malignant Papillomatous Cysts*

Case	Duration	Age	Marital	Nipple Change	Skin Change	Nipple Discharge	Evidence of Cyst	Fluid Content	Papilloma		Secondary Carcinoma		Clinical Diagnosis
1	.....	72	M	None	Fixation	None	Fluctuation	Straw-colored	Thick, sessile, friable		Mass at base of papilloma outside cyst wall		Carcinoma
2	1½ yr.	67	M	Slight retraction	Dimpling	None	None	Bloody	Thick, pedunculated		Mass at base of papilloma outside cyst wall		Carcinoma
3	3 yr.	33	M	None	Dimpling	Bloody fluid 3 years ago	Fluctuation	Bloody	Ball-shaped, sessile		Mass outside continuous with papilloma, glands metastatic		Carcinoma
4	8 mo.	25	M	None	Dimpling	None	None	Solid growth filled cavity	Rounded, solid mass		Glands metastatic		Carcinoma?
5	8 mo.	47	M	None	Dimpling	None	Fluctuation	Straw-colored	Slender, pedunculated		Mass at base of papilloma outside cyst wall		Carcinoma?
6	7 mo.	39	M	Retraction	Fixation	Greenish yellow	Fluctuation	Bloody	Thick, pedunculated		Huge mass continuous with papilloma, glands metastatic		Carcinoma
7	.....	37	M	None	None	None	Fluctuation	Bloody	Broad, low, sessile		Mass at base of papilloma outside cyst wall		Carcinoma?
8	7 mo.	28	M	None	None	None	Fluctuation	Straw-colored	Slender, pedunculated		Mass outside continuous with papilloma, glands metastatic		Carcinoma
9	7 mo.	56	M	None	None	None	None	Solid growth filled cavity	Rounded, solid mass		Microscopic invasion beyond cyst wall		Carcinoma?
10	6 mo.	48	M	None	None	None	Fluctuation	Straw-colored	Broad, low, sessile		No mass, thickening of cyst wall, glands metastatic		Carcinoma?
11	8 yr.	45	M	Retraction	Skin Implants	None	Fluctuation	Bloody	Sessile		Masses in cyst wall glands metastatic		Carcinoma
						Bloody		Bloody			Mass		Glands
				+ —	+ —	+ —	+ —	+ —	Pedunculated	Sessile	s Glds.	c Glds.	s Mass
				3 8	7 4	1 1	8 3	5 4	4	7	6	4	2

papillomatous cyst suggests that these growths, when thus confined, have a tendency to become malignant.

The logical treatment of papilloma is excision, and would be advised in all cases of bleeding from the nipple if the tumor could be removed without the sacrifice of the whole breast. Immediate local intervention is advisable in the presence of localizing signs, such as the alternate appearance and disappearance of a mass, associated with intermittent discharge of bloody fluid from the nipple, or the escape of blood from the nipple only when a certain spot of the breast is pressed on.

DIFFERENTIAL DIAGNOSIS

With the discovery of a cyst without a history of bleeding as an evidence of papillomatous nature, the immediate problem becomes one of diagnosis rather than of treatment. The differential diagnosis between blue dome cyst and papillomatous cyst by clinical means alone is extremely complicated, and seldom is conclusive. The history may yield no helpful information. Inspection may show skin or nipple changes if the cyst that papilloma or cancer in the cyst can be excluded if the fluid is not bloody and there is no palpable mass left after aspiration. Aspiration was performed in two cases in my series because operative procedure was contraindicated or refused. In both instances, the fluid was straw-colored; the whole tumor disappeared with withdrawal of the fluid; no masses were palpable about the wall of the collapsed cyst, and there has been no refilling.

The objections to this procedure are that it is unsafe and inconclusive. In the first place, two out of four cancers in the third decade arose from intracystic papilloma (Table 1, Cases 4 and 8), and since cancers at this age develop with great rapidity, no time dare be lost in making a diagnosis. Secondly, the recovery of clear, straw-colored fluid does not exclude papilloma or cancer, as the fluid may not differ in any respect from that in the true blue dome cyst, even in the presence of extensive cancerous growth (Table 1, Cases 5, 8 and 10). Thirdly, palpation after aspiration may exclude a mass (cancer) in the wall or in the adjacent tissues, but does not exclude papilloma even after

4. McFarland, Joseph: Surgical Pathology, p. 442.

malignancy has developed and extensive metastases have taken place (Table 1, Case 10). Fourthly, clinical procedures cannot always distinguish between solid and cystic growths, and indiscriminate needling of breast masses is little short of medieval practice.

TREATMENT

Without evidence of malignancy or papilloma, therefore, surgery is necessary for establishing the diagnosis. Exploratory radial incision over the cyst, with evacuation of the contents, gives absolute knowledge as to the nature of the cyst, causes practically no disturbance in the breast gland, and leaves no mutilation except the faintest white scar line. Multiple radial incisions are not objectionable when compared with simple amputation of the gland or the greater disturbance from numerous lateral cuts for the purpose of reaching other cysts through one incision. The Warren method of approach may be used to advantage except in cases that prove to be cancer. Here, the wide opening up of the subareolar lymphatics will lessen the patient's chances for cure.

The discovery of the blue dome cyst calls for simple stripping of the lining and the careful approximation of the raw surfaces. A margin of good breast tissue is unnecessary interference with the gland, because the tissues adjacent to the cyst lining are no more likely to be the seat of precancerous or cancerous change than the breast tissue elsewhere.[2] The wound could even be closed without excision of the lining, but the cyst might fill again and require repeated aspiration.

In papillomatous cysts without evidence of malignant change or in localized intraductal papilloma, a wedge-shaped piece of breast should be excised. Care should be taken to close tightly and accurately the posterior cut edges of the gland, because failure in this step means a defect or furrow where the breast tissue wound is healed. The finest plain catgut should be used; the sutures should not penetrate deeply, and the knots should be tied on the under surface. The outer edges should be united in a similar manner, but this cannot always be accomplished with the degree of perfection desired, because the superficial surface is not a smooth plane. No sutures or ligatures should be buried within the gland itself between the planes of the under and the outer surface.

The treatment of malignancy is the complete operation. Here, the clinical picture is diagnostic in most instances, while the exploratory is conclusive in the remainder. In this respect, a study of the eighteen cases in my series brings out the following facts: Eight out of eleven malignancies had associated clinical evidence of cancer. Six of these showed skin dimpling or discoloration, and in three the nipples were retracted, while in the one in which there was no skin or nipple change, the axilla was completely filled with large, hard glands. The three remaining malignancies were readily recognized as such when cut down on. At exploration operation or examination of a gross specimen after a complete operation, eight out of eleven showed a cancerous mass in the breast tissue beneath the base of the papilloma. In two out of the eight, the papillomas were threadlike, fragile and questionably innocent in appearance; while in two out of the three without cancerous mass at the base, the papillomas were sessile or fleshy. On the other hand, the one nonmalignant cyst contained a threadlike growth without an associated mass in the wall or enlarged glands in the axilla. The papillomas in the ducts were very small, had threadlike pedicles, and floated free in a dilated duct with intact walls and without transplants.

The histories showed that each patient had been aware of a lump for at least eight months. These figures do not indicate the true age of the tumor, but even at that advanced period in the growth some may have been benign when first discovered. At any rate, there was a time in the course of each of these cases when the clinical picture was that of a cyst without skin and nipple changes, and there was a time, therefore, when the exploratory operation of an apparently innocent cyst would have given valuable information, and possibly saved the breast or at least the life of the patient.

TABLE 2.—*Record of Seven Cases of Benign Intracystic or Intraductal Papilloma*

Case	Duration	Age	Marital	Nipple Change	Skin Change	Nipple Discharge	Evidence of Cyst	Fluid Content	Papilloma	Clinical Diagnosis
12	8 yr.	43	M	Doubtful retraction	None	Oily for 2 years, bloody for last year	Doubtful fluctuation	Several straw-colored, 1 bloody	Small, slender, pedunculated	Chronic cystic mastitis with intracystic papilloma
13	4 mo.	53	M	None	None	Bloody at first, watery for 4 mo.	None	None, papilloma filled cavity	Slender, pedunculated	Chronic cystic mastitis with intracystic papilloma
14	3 mo.	48	S	None	None	Bloody 3 months	None	None, papilloma filled cavity	Clubbed, pedunculated	Chronic cystic mastitis with intracystic papilloma
15	20 yr.	55	M	None	None	Bloody 2 months	None	None, papilloma lay in empty duct	Many slender, pedunculated	Intraductal papilloma
16	10 mo.	33	M	None	None	None	None	None, papilloma filled duct	Minute, pedunculated ?	Chronic cystic mastitis, probably carcinoma
17	6 mo.	41	M	None	None	Bloody 6 months	None	Bloody	Slender, pedunculated	Intraductal papilloma
18	2 mo.	27	M	None	None	Bloody few weeks	None	Bloody	Sessile, very small	Intraductal papilloma
						Bloody		Bloody		Papilloma Diagnosed
				+ 1	− 6	+ 6	− 0	+ 1	− 6	+ 3	− 0	Pedunculated 6	Sessile 1	+ 6	− 1

CONCLUSIONS

1. "Blue dome cysts" and papillomatous cysts cannot be differentiated clinically.
2. The fluid in a papillomatous or cancerous cyst may be straw-colored.
3. All cysts should be explored.

REPORT OF CASES

CASE 4.—Mrs. M. V., aged 25, had had a lump in the right breast for eight months. It had increased from about the size of a pea to that of a small egg. There were no subjective symptoms. The first child was born nine months before the tumor was discovered. The patient nursed the baby for two months only. There was a smooth, buried mass, doubtfully fluctuant, about 3 cm. in diameter; it was not sensitive. There was definite skin dimpling; there was no nipple retraction. There was one large, hard gland, about 2 cm. in diameter, in the axilla. An exploratory operation revealed a cystlike cavity completely filled with a cellular, friable growth, containing many areas of degeneration.

Examination of the specimen after complete operation showed that the growth had at one place infiltrated through the wall, and was beginning to invade the breast tissue proper. Grossly and microscopically, one axillary gland at the upper edge of the breast showed involvement with an adenopapillary type of carcinoma.

The patient is well. There is no suggestion of recurrence or internal metastases three years after the operation.

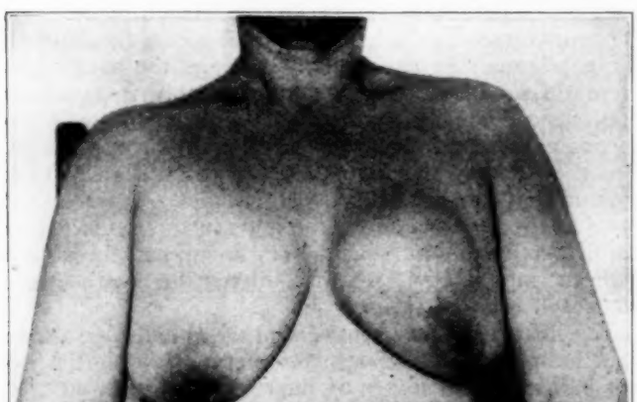

Fig. 1 (Case 10).—Malignant cyst containing straw-colored fluid; carcinoma plaques in the wall showing papillary pattern.

CASE 5.—Mrs. J. W., aged 47, had had a tumor in the breast for eight months. The growth of the mass was rather rapid, from the size of the tip of the little finger to that of an egg. There was an intermittent burning sensation outside the tumor, beginning about two months previous to the discovery of the tumor. No etiologic factors were present; there were no changes in the nipple.

There was a single, firm, nodular, fluctuant mass, about 5 by 5 cm., in the upper half of the right breast. There was visible bulging, slight discoloration of the skin from applications, and slight dimpling of the skin on manipulation. The axillary glands were doubtful.

An exploratory incision showed one papillomatous cyst, containing a clubbed, friable growth, and several other cysts of the true "blue dome" variety. All the cysts were filled with a straw-colored fluid without traces of blood. There was no infiltration at the base or thickening of the wall. A secondary mass, thought to be another cyst, was present, but, when incised, it proved to be a cancer. An examination of the specimen after a complete breast operation showed a malignant papilloma and a secondary medullary cancer mass without glandular metastases. The patient is well, with no signs of recurrence three years after the operation.

CASE 8.—Mrs. M. H. had had a lump in the right breast for seven months. It had grown from about the size of a small walnut to that of an orange. It appeared in the eighth month of her last pregnancy. There were no subjective symptoms till one month before I saw her; then sharp, shooting pains became intermittent.

There was a mass in the upper hemisphere in the nipple line, buried beneath the breast gland, definitely flucuant about 8 cm. across. No skin or nipple changes had taken place. There was one large, hard axillary gland. The mass was clinically diagnosed cyst, probably malignant.

An exploratory incision showed a blue dome cyst with straw-colored fluid; a few slender, very friable papillomas were attached to a smooth walled cyst. A secondary mass beneath the area of attachment of papillomas showed a solid, typically cancerous, cut surface. An examination of the specimen after a complete operation showed a lactating breast, almost completely riddled with carcinomatous masses. The original growth measured about 2 cm. in diameter, the other 5 mm. or less. The axillary glands immediately adjacent to the breast were metastatic.

The patient died six months later, of generalized metastases.

CASE 10.—Mrs. L. L., aged 48, had been aware of a mass in the upper outer quadrant of the left breast for six months. For about the same length of time, she had had some lumps under the arm. The mass in the breast grew rapidly, from about the size of a small almond to that of a medium sized orange (Fig. 1). The nipple on this side had been retracted for twenty-two years, since the weaning of her youngest child, with possibly some increase in retraction since the tumor appeared. The patient had no history of mastitis or any other trouble with her babies.

Palpation revealed a large, smooth, fluctuant mass in the upper half of the left breast; no skin changes over it or about it, and no other masses in the breast. The axilla contained many enlarged and very hard glands.

An incision over the cyst showed a deep blue color; a nick in the wall allowed the escape of straw-colored fluid; and on inspection of the lining there was a broad, sessile, wartlike growth about 2.5 cm. across and about 3 mm. in height, occupying the axillary side of the cyst. Round about this papilloma were smaller quite similar tumors, apparently transplants. About half the lining of the cyst was smooth and shiny, exactly like that in the blue dome cyst. There were no masses in the breast outside of the cyst. Study of the specimen after a complete operation showed slight infiltration with cancer cells in the base of the papilloma, but apparently no involvement outside of the true wall of the cyst. The axillary glands were extensively involved with an adenopapillary type of carcinoma. Six months have passed since the operation.

CASE 11.—Mrs. M. W., aged 45, had a lump in the left breast for eight and a half years. She received massage by an osteopath. One and a half years before admission, the lump became firmer; the skin became puckered over the mass, and the breast seemed to be a little larger. The patient was first seen by a regular physician one year before admission. She was given roentgen-ray treatments over a period of four months; the lump started immediately to grow, and

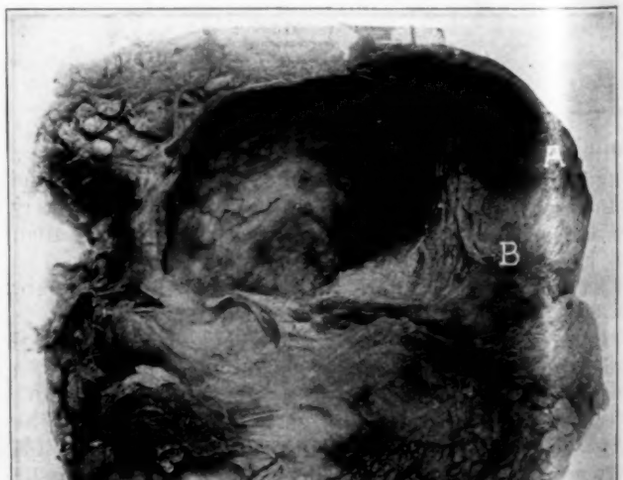

Fig. 2 (Case 11).—Gross specimen; smooth cyst wall with carcinomatous masses represented by slightly raised plaques: *A*, nipple; *B*, secondary carcinomatous mass.

to become more and more painful. Five months before admission, the mass was tapped, and 600 c.c. of blood stained, watery fluid was removed. Three other tappings were done in the interval; the last, three weeks before admission. The quantity of fluid removed was 800, 1,000 and 600 c.c., respectively. The patient's general condition was apparently good.

Examination showed an enormously enlarged left breast, with marked retraction of the nipple. There was discolora-

tion of the skin from the roentgen-ray treatments, and there were multiple small carcinomatous papules in the skin over the whole left breast. There were huge glands in the axilla. An examination of the specimen after complete removal showed an enormous cyst, with a comparatively smooth lining surface, on which were numerous plaquelike transplants. Beneath the surface at one point was a huge mass, approximately 4 cm. in diameter, of solid cancer. The muscle in many places was infiltrated by cancer. The axillary fat contained enormous masses of metastatic cancer.

This was a recent case. The patient is doing well (Fig. 2).

ABSTRACT OF DISCUSSION

DR. W. A. MACCARTY, Rochester, Minn.: If a surgeon merely aspirates a cyst of the breast and does not see the rest of the breast, how does he know anything about that breast? That question must be answered. Two possibilities for malignancy exist in association with blue dome cysts so called—and, as Dr. Bartlett has said, blue dome cysts do not differ from any other cysts in the breast—one is the papilloma inside of the cyst and the other is carcinoma outside the cyst. I recall five that had a carcinoma outside, as much as 2 or 3 cm. away from the cyst, the cysts themselves showing no malignant changes. Only the week before last, Dr. Judd removed such a breast for a cystic condition and found a large single cyst of the "blue dome" type, and I found a grossly visible carcinoma 3 or 4 cm. away from the cyst. I have seen a number of such cases. I do not mean to say that all cysts are apt to be associated with papillomas or carcinomas. I do not know the percentage of occurrence of these two conditions; but I know absolutely that they do occur together, and consequently I think that the conservative surgeon will always try to save 2 or 3 or more per cent. of the cases. In my experience, papillomas are usually multiple conditions in the breast. I have seen intracystic papillomas removed with the cyst, and on examining the whole breast I have found papillomas. If one finds one such tumor the chances are that if one hunts long enough one will find several others. As far as diagnostic efficiency is concerned in these cases: In a comparative study of the clinical diagnosis with pathologic findings in more than 3,000 breasts I found evidence of diagnostic efficiency only 80 per cent. in benign tumors of the breast; in other words, in 100 cases pronounced benign by the surgeon, approximately 20 per cent. will turn out to be malignant. I want to object to the aspiration of cysts, because I do not think it is a necessary procedure and might be associated with the danger of transplanting cells if they are malignant. I see no real surgical necessity for aspirating cysts. In one case of which Dr. Bartlett showed pictures I made a diagnosis of carcinoma, and my judgment would demand that the mammary gland be removed. At this woman's age, and she looked as though she were over 35, I would remove the mammary gland-bearing structures. It should make no difference to the surgeon whether he is dealing with a cyst or a solid tumor of the breast; the surgical procedure is the same —removal of the breast without the lymph glands, and then decide whether or not he will perform a radical operation. Our rule is this: If the patient is a very young woman, the chances are that the tumor is benign and we should conserve the breast. We remove the tumor-bearing portion with a reasonable amount of tissue around the tumor for investigation, provided no other irregularities in the breast are palpable or visible. Then that specimen is studied. If it is a solid tumor, we look for carcinoma or sarcoma, independently or together, because they occur independently and sometimes together. If it is a cyst, we look for a papilloma in the cyst, which brings up this question that some are benign and some are malignant, and in some cases we cannot be absolutely certain whether they are benign or malignant. It is a question of studying the cells. However, if the patient was a member of my family and we found a papilloma in the cyst, I would ask the surgeon to remove the gland-bearing portion of the breast, because she might have a small carcinoma outside the cyst. That has occurred.

DR. FRANK E. ADAIR, New York: Today patients with breast tumors present themselves to the surgeon at such an early stage of tumor development that it is incumbent on us to learn a new group of signs and symptoms. Careful analysis of our cases has made us aware of the substantial percentage of malignancy in what we formerly diagnosed as simple blue dome cyst. I agree with most of what has been said concerning the method of handling breast cysts. However, when it comes to the point of opening the cyst while in situ, I firmly oppose this step; first, because it does not afford adequate opportunity for making a careful scrutiny of the neoplastic tissue; secondly, because of dissemination, in case there is malignancy present. We should completely excise every cyst with a generous margin of surrounding breast tissue. The next step is to determine whether or not it is a case of malignancy. I wish to emphasize one point, that it is the duty of the surgeon to familiarize himself with gross tissue diagnosis so that he can determine for himself whether or not he is dealing with malignancy. Having determined that the cyst contains no malignant tissues, one can stop at this point. But if the surgeon feels that the papilloma present has begun to infiltrate through the wall into breast tissue, he should immediately do a radical operation. It is only a question of time until a papillary growth into a breast cyst will become malignant. The most important place to start the treatment of blue dome cysts is at the very beginning. By that I mean prophylaxis—the prevention of the cyst. There are various forms of chronic mastitis. The end-result of chronic inflammation in breast tissue differs in individuals. In one case the end-result will be formation of cysts of varying sizes; in another, the formation of fibromas; in another, the complete overgrowth of the duct tissue into adenomas; in other cases, fibrosis and sclerosis of the entire gland. Stopping the process early is the only way to prevent the formation of cysts, fibromas and adenomas. These are due to irritation and inflammation from absorption of the lipoids and degenerated products of lining epithelium. Relief from this condition is procured by breast drainage with breast pump and massage. We have been trying this method in forty cases and have been much impressed to note the clearing up of symptoms of tenderness and pain in the early phases of chronic mastitis. But in the advanced cases, in which fibro-adenomas, cysts and sclerosis were present, we have obtained no results. The worst possible thing to do in cases of malignancy is massage.

DR. EDWIN I. BARTLETT, San Francisco: In regard to amputation of the breast, Dr. Bloodgood advocates, I believe, nonintervention in a breast the seat of multiple cysts, as simple cysts are no menace to the patient's life or health. On the other hand, I am sure it has been every one's experience that breasts containing cysts may also contain solid tumors, and sometimes these solid tumors are cancerous. It does not seem quite right, however, to amputate the breast with multiple tumors, most of which are definitely cystic, in the hope that the patient may be saved from a possible cancer. There is so little damage done to the breast from multiple incisions that it is worth while to cut down on the individual tumors. If they are simple cysts, the woman still has her breast. In regard to the removal of the breast because of papilloma, every one has had the experience of seeing cases of bleeding from the nipple which have not afterward developed cancer or any sort of a demonstrable tumor. There must be a lot of papillomas, therefore, which not only do not develop into cancer but which disintegrate. These cases should be watched carefully for signs of localization. Regarding the objections to opening a malignant cyst, I hold that there is a great deal more danger to the patient if the mass is removed completely, because cutting down into a cyst means that one cuts through the superficial lymphatics only, while in taking out the lump one cuts through every lymphatic going to and coming from the tumor. Dr. Adair's experience with chronic mastitis is of especial interest. I presume he refers to that group of conditions known as chronic mastitis, chronic cystic mastitis, Schimmelbusch's disease and abnormal involution. In my experience, I have obtained the best results by leaving these breasts absolutely alone. I have become convinced that these conditions are the result of general disturbances in the body, such as con-

stipation, mental overload and pelvic disturbances. With the clearing up of these general disturbances, the breasts have become normal in that they have lost their pain and in many instances their lumps. There is an objection to massage in that it is the worst possible thing in the presence of cancer, and it is not always possible to be sure that some of the lumps are not cancer. Delay for the purpose of observation is objectionable, but of the two evils it is decidedly the lesser.

PUBLIC HEALTH RESEARCH *

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Research is a systematic attempt to gain more knowledge. It is an ancient institution. When Adam and Eve first shook the tree of knowledge, they unwittingly inaugurated a research attended by immediate and far reaching results. A new world was literally opened up to them. They experienced a prompt transfer from a world in which progress was excluded by definition, to one in which progress was demanded, but dependent on their own efforts. Their descendants have been working at this program ever since. As the centuries and millenia have passed, research has revealed new and vaster worlds for man's development or exploitation. The result has been what we call progress. Some people believe that this progress has been spurious, a mere chasing of the lost caudal appendage around a circle. We health officials believe that it has been real, a slow climbing of a spiral which has left the caudal appendage ever farther behind. If we do not believe this, we should not be health officials. We should join the ranks of decadent poets and write free verse.

My chief object on this occasion is to invite attention to a conception of research which is not new, but which is, I believe, somewhat neglected. This conception is that it is not enough that research should reveal to us fundamental principles, not enough that it should demonstrate causes and indicate general lines of progressive activity. It should be demanded of research that it furnish us with all the information necessary for the accomplishment of the end we have in view.

An illustration taken from a long list of available ones may make this clear. In the year 1880, Laveran's researches demonstrated the parasite of malaria. This alone did us little more good than knowing the cause of leprosy has thus far done. In 1898, Ross demonstrated mosquito transmission. Many subsequent researches have not only revealed much of the life history of mosquitoes but also developed methods for their extermination. At this point, if we followed the traditional procedure, we should exclaim, "Science has now made its final contribution to the control of malaria." We should hand this scientific information over to the great public and bid it rid itself of malaria. And the great public would proceed to do nothing of the kind. Consider how far we still are from our goal. As soon as we try to apply our knowledge, we are confronted with the fact that the populations which typically suffer from malaria are both too ignorant to undertake remedial measures, and too poor to pay for them. We are asking them to lift themselves over the fence by pulling on their own bootstraps. It may be thought that the remaining part of the problem is not one for research to solve—that all that remains is to tell the educators to educate the people, and the economists to relieve their poverty. This might suffice with some problems, but in the case of malaria, it has not worked. The educators are fully occupied with the schools, and the economists with the crops. Public health must itself solve the educational and economic problem, with such help of a technical nature as it can get. And this it is doing by means which are as truly research as were those which originally discovered the *Plasmodium malariae*. Malaria is being successfully combated, and the suffering population is being provided with a fulcrum, so that it can lift itself over the fence by the bootstraps.

The principles illustrated in the case of malaria are applicable to almost any disease or condition confronting public health. Let us not discontinue research as soon as we get beyond the microscope stage. Let us use a telescope if our unaided vision is too limited.

We are not to be content with research therefore, when it has furnished us with only an appropriate answer to our problems. We are to require of it that it shall tell us not only what are the causes of our troubles, and what to do about them, but also how practically to accomplish the desired end.

The bacteriologist and the chemist, the pharmacologist and the clinician may justly claim that their function is ended when they have supplied us with fundamental information concerning the causes, prevention and cure of disease. For some reason this information has been specifically designated as "scientific." But we, as health workers, are dealing with material which is just as susceptible of scientific approach, and which offers fully as great rewards for systematic research. Moreover, we cannot justly claim that our service is complete until we have actually succeeded in eradicating disease.

I am fully aware that we are all cognizant of the responsibility, and are attempting with great earnestness to reach the goal. My only solicitude is regarding the methods that we are employing. Is it not true that in attempting the solution of the final and most difficult part of our problem—how to put our knowledge into effect—we have not employed to the full extent the methods of scientific research? Have we not instinctively fallen back on the trial and error methods that characterized the slow-moving centuries before the dawn of science?

Possibly our hesitancy or failure to employ scientific research methods has been due to the fact that the realms which we must invade were not contemplated in our training and past experience. These realms belong not to the microscope and test tube, the bedside of the sick or the surgeon's scalpel. The implements are different, but the basic methods are, or should be, the same. First, we make and record our observations; second, we develop hypotheses to explain them; third, we test the hypotheses out under controlled conditions. In the familiar fields of our customary training, we did our testing with guinea-pigs and test tubes; in the new theater of action in which we must play our part, we employ the computing machine and the statistician's graph, the economist's tabulation and the tests of the psychologist.

Perhaps we have been deterred also by some scruples against entering fields supposedly occupied by others. These scruples would be justified if it were to be discovered that these fields were being profitably cultivated

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

in a way that promised fruit for our basket. In such cases we might consider mutually profitable cooperation; but when we find these fields neglected so far as pertains to activities of interest to us, it is proper and even necessary that we enter them for our own purposes. By doing so we by no means crowd anybody out—our policy should rather be to interest experts already trained and at work, in our own particular problems, and to enlist them in our activities.

It is our function, in other words, to follow the trail of disease wherever it leads, and to do battle with the enemy wherever encountered. If the chief cause of a disease is poverty, then the proper field of public health research for this disease is in the realm of economics. If ignorance is the chief stumbling block, let us study education. If outworn forms of civic organizations stand in our way, let us learn how to build better ones. But whatever our problems prove to be, we should not expect success to follow a hit-or-miss system of attack. Research should be systematic, and should closely follow the principles that have produced in their application such notable advances in the so-called physical sciences.

Two practical considerations remain: Who is to do this research work, and who is to pay the bills?

No general answer can be given to the question of whether it is better to train a health official as a specialist in an unfamiliar line of research, or to familiarize the trained expert with the needs of the public health. Both systems have been carried out successfully. A guiding principle may possibly be found in the relative amount of training to be accomplished, with selection of the simpler task. If a specialty requires many years of intensive training for its mastery, it would be manifestly unprofitable to attempt the training of health officials in such a specialty. It would be far better to seek such a specialist who happens to have an interest in public health, imbue him with the spirit and objects of our work, and employ him in our organization. On the other hand, when a specialty involves no considerable amount of preparation, or when it is in an undeveloped state, when its devotees are manifestly floundering, we may without undue presumption undertake qualifying ourselves. Pasteur was a chemist.

Now as to the question of funds. Those of us who have the responsibility for the allotment of public health funds should deliberately set aside a proportion of them for research purposes. The argument will be made that the routine work of the office, already overburdened, will suffer. The health officer who cannot find one or several activities of his department that are now being administered in such a cumbrous, expensive and ineffectual way that their reduction would not be reflected in a noticeable diminution of public service is to be heartily congratulated. He is not in need of research. Most of us do some things in just this uneconomical fashion. We do it because we know no better way. Nobody can tell us a better way. Sometimes we do it because others, not so well informed as ourselves, demand it of us. Sometimes we do it because we have never analyzed each activity on a cost basis, and determined on which side of the account the balance lay. We should deliberately diminish the routine allotment for these nonpaying activities, and devote the money to finding better solutions by means of scientific research.

When the responsibility does not rest with us personally, we should make the issue clear to those whose duty it is to allocate funds for public health work.

Now and then a voice is heard protesting that research has already so far outstripped practice, that it should be restricted rather than encouraged until practice has caught up. This is the weightiest argument in favor of further research; for, until investigation has shown us exactly how to put our knowledge into practice, it has fallen short of complete service, and should be pushed further, no matter what unfamiliar fields it leads us into.

The needs and the opportunities for research in public health are everywhere about us. If our workers, from the humblest inspectors upward, were actuated by the research spirit, we should make much more rapid progress in the solution of our problems, with little, if any, added cost, and with ultimate economy. It is our duty and privilege to inculcate this spirit in our subordinates, and, as a slogan which will serve as a directing stimulus and which sums up the objects of public health research, it is suggested that three words suffice: "Quicker, Better, Cheaper."

ABSTRACT OF DISCUSSION

DR. EDWIN O. JORDAN, Chicago: The whole history of human thought is the constant emergence of new problems. The apparent solution of one problem brings us face to face with another, or perhaps with several. Research is always dynamic, never static. Dr. Stimson has clearly indicated that public health research is no exception to this principle. There is certainly nothing final about public health work. It is not enough to discover ways in which such a disease as malaria or typhoid may conceivably be controlled; we must try to control it. In the attempt to control it, we find other problems, other diseases pressing on us, unsuspected difficulties, new sources of trouble: we learn that, in addition to typhoid, there are several paratyphoid fevers; that diphtheria convalescent carriers may not be so important a factor in spreading disease as we had supposed; that medicinal treatment of hookworm may, perhaps, be more effective as a control measure than soil sanitation. Hardly an infectious disease can be mentioned that does not bristle with problems needing research. The triumphs of public health have been so great that the temptation is strong to dwell on achievements rather than on shortcomings and opportunities for further advance. We still lose in the United States every year more than 600,000 lives by the death of persons under the age of 50 (621,548 in 1920); we still lose more than 200,000 infants (211,696 in 1920), and there are many stillbirths. As long as this condition, or anything like it, exists, who can say that there is no need for public health research? If an outbreak of pandemic influenza such as caused a loss of 500,000 lives in this country in 1918-1919 were to recur next October, we should be nearly, if not quite, as helpless to prevent its spread as we were six years ago. As a community, we are making no organized effort to learn how to prevent the coming of another great influenza epidemic or how to deal with it when it comes. There is time to mention but one of the new problems opened up by recent public health work. The reduction in the infant death rate that has already been brought about has aroused the apprehension in some quarters that our accomplishments in keeping alive the physically less sound or less resistant individuals will, in the long run, lower the general physical level of the race. Interference with natural selection, it is feared, will operate disastrously for mankind. While the question is by no means so simple as here stated, it is evident that a very real biologic problem is involved, and that this problem can be solved, not by speculation or by polemics, but by fundamental biologic and public health research. Carefully conducted investigations extending over many years may be necessary before any satisfactory evidence is obtained, but it is too momentous an issue to be dismissed as of importance to future generations, but not to us. Preconceived opinions or natural prejudice should not be allowed to sway our judgment. The aim of public health is to prevent not merely the spread of disease, but also the occurrence of disease.

DR. HERMAN N. BUNDESEN, Chicago: Research is the basis of all progress in public health administration. Preventive medicine is still in its infancy; yet, as a result of the practical application of the truths established by research, brilliant achievements have already been accomplished. Many communicable diseases are now a rarity in civilized communities. Effective methods are now at hand for the prevention and suppression of typhoid, diphtheria, smallpox, yellow fever and malaria. Food-borne epidemics of disease are no longer the menace of former times. The pasteurization of milk and chlorination of water supplies have practically eliminated these once prolific sources of infection. The iodin treatment in the prevention of endemic goiter is another notable example of progress in public health based on research. These achievements are the result of the fruitful effort of research workers. There is danger in this situation of losing sight of the fundamental principle that further progress depends on further research. Charged with the responsibility of the administration of a highly perfected public health organization, the health administrator may yield to the temptation to apply his energies and resources exclusively to the current enforcement of existing laws and regulations based on past researches. He may make no provision in his budget for extending knowledge or for applying the already known facts of science to the practical work of his department. There is a tendency, particularly on the part of lay legislators, to regard a corps of research workers as a nonproductive outlay of resources. The health officer who has not successfully overcome this objection and provided himself with a scientific personnel will find himself unable to cope with new problems arising in emergency, and will soon see his organization falling behind the procession. Definite funds for a research organization should be provided in every health budget, in the interest of economy and progress. The development of new laws and fundamental truths may perhaps be left, for the present, principally to the research department of the various universities and endowed institutions. The practical application, however, of the truths so developed is preeminently a function of the public health laboratory. Although the research problem will touch all bureaus and divisions, it should center about the laboratory. The essential control and planning of the problem, the correlation, interpretation and reporting of data are laboratory functions. A portion of the laboratory budget should be applied constantly to research procedure. A research division acts as a stimulus to the laboratory and general personnel, provides short cuts, eliminates waste, promotes efficiency, makes possible sudden expansion in emergencies, and builds for the future progress of the organization and of the advancement of preventive medicine as a whole.

DR. WALTER H. BROWN, Mansfield, Ohio: There is no question about the value of research as a laboratory procedure. Dr. Stimson has touched a very responsive chord in those of us who are engaged in the field of application of scientific knowledge. We have had an accumulation of scientific knowledge as to methods of control of disease, and, yet, when we come to the final test, the administrator has not maintained that scientific attitude of the research worker which is so necessary if we are to build soundly a system of public health work in the United States. I feel there is just as much need for us to test definitely our work from the administrative standpoint as there is for the research worker to test his materials and results with actual physical chemical tests. There are health administators who are afraid to study their work on an efficiency basis with a proper scientific regard for the results. The statement of the commissioner of health of the city of Chicago illustrates definitely this point. We fail to take full advantage of the educational values of our work. This alone can make public health work real to the community. Until the public health administrator uses all the resources in his community, we shall continue to have just such things as Dr. Bundesen is dealing with in Chicago. An ordinance like the one passed in Chicago could not possibly be enacted. I believe that the time has come when we should consider practical research as one of the prime functions of a health administrator.

DR. A. M. STIMSON, Washington, D. C.: Dr. Bundesen said the proper place in the public health organization for a division of research lies in the laboratory. I should be inclined to put it this way: The proper place for a laboratory is in a division of research; then I would interpret the term division of research to include the whole public health organization.

THE COMPARATIVE VALUE OF ETHYLENE AS AN ANESTHETIC*

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The status of any anesthetic agent depends on the success of its clinical use.[1] Two series of cases in which ethylene was administered are, therefore, reported, one from the Mayo Clinic, and the other from Seattle. The first includes a larger number of cases, without routine blood pressure records, and is briefly presented as a preliminary report. The second consists of a smaller number of cases, with routine blood pressure records, and is reported in detail.

Ethylene,[2] or olefiant gas[3] (C_2H_4), may be made by extracting a molecule of water from alcohol. It is a hydrocarbon gas and a constituent of illuminating gas.[4] It has a pungent, sweetish odor, is inflammable,[5] and is quite comparable to ether in these respects.[6] The gas is compressed to a liquid in steel cylinders, and is available for use in the same manner as nitrous oxid.

Ethylene in combination with oxygen is administered by means of a gas machine, and ether may be added. A preliminary hypnotic is often desirable. The signs of anesthesia with ethylene and oxygen are much the same as when nitrous oxid and oxygen are used.

The advantages of ethylene anesthesia are striking when the gas is properly given. Analgesia and anesthesia, with relaxation, may be produced very quickly and usually without cyanosis.[7] More oxygen can be given with ethylene than with nitrous oxid, because ethylene is the more potent. Ethylene is a relatively safe anesthetic agent just as long as the patient's skin and blood remain pink, and, as a rule, it does not prostrate

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* From the Section on Anesthesia, Mayo Clinic.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Foy, G.: Anesthetics, Ancient and Modern, London, 1889, p. 70. Simpson, W. G.: Anesthesia, Hospitalism, Hermaphroditism, etc., New York, D. Appleton & Co., 1872, pp. 165-166.

2. Brown, W. E.: Ethylene as a General Anesthetic, Am. J. Surg. (Anesthesia Supplement) **38**: 4-7 (Jan.) 1924. Cheinisse, L.: Deux nouveaux anesthésiques: l'acétylène et l'éthylène, Presse méd. **31**: 596-598 (July 7) 1923. Ethylene for Anesthesia, J. A. M. A. **82**: 1609 (May 17) 1924. Hewitt-Robinson, quoted by Luckhardt and Lewis (Footnote 7), p. 1851. Luckhardt, A. B., and Carter, J. B.: New Anesthetics: Ethylene and Acetylene, J. A. M. A. **80**: 1476 (May 19) 1923. Nunneley, T., quoted by Luckhardt and Lewis (Footnote 7), p. 1851.

3. Simpson, quoted by Luckhardt and Lewis (Footnote 7), p. 1851.

4. Brown, W. E.: Preliminary Report on Experiments with C_2H_4 as a General Anesthetic, Canad. M. A. J. **13**: 210, 1923.

5. Davis, C. H.: Explosibility of Ethylene, J. A. M. A. **82**: 1607, 1924. Luckhardt, A. B.: The Potential Dangers Attendant on Ethylene-Oxygen Anesthesia, ibid. **82**: 1603-1604 (May 17) 1924.

6. Eulenberg, H.: Handbuch der Gewerbe-Hygiene auf experimenteller Grundlage, Berlin, A. Hirschwald **11**: 927, 1876. Hermann, L.: Ueber die physiologische Wirkungen des Stickstoff-oxydulgases, Arch. f. Anat. u. Physiol., 1864, p. 521; Lehrbuch der experimentellen Toxicologie, Berlin, A. Hirschwald, 1874, pp. 101, 276. Luessem, F.: Experimentelle Studien über die Vergiftung durch Kohlenoxyd, Methan und Aethylen, Ztschr. f. klin. Med. **9**: 397-428, 1885. Mayer and Jacobson: Lehrbuch der organischen Chemie, Leipzig, 1907, p. 836. Nunneley, T.: On Anesthesia and Anesthetic Substances Generally; Being an Experimental Inquiry into Their Nature, Properties and Action; Their Comparative Value and Danger and the Best Means of Counteracting the Effect of an Overdose, Tr. Prov. Med. & Surg. A., London, 1849, pp. 167-381.

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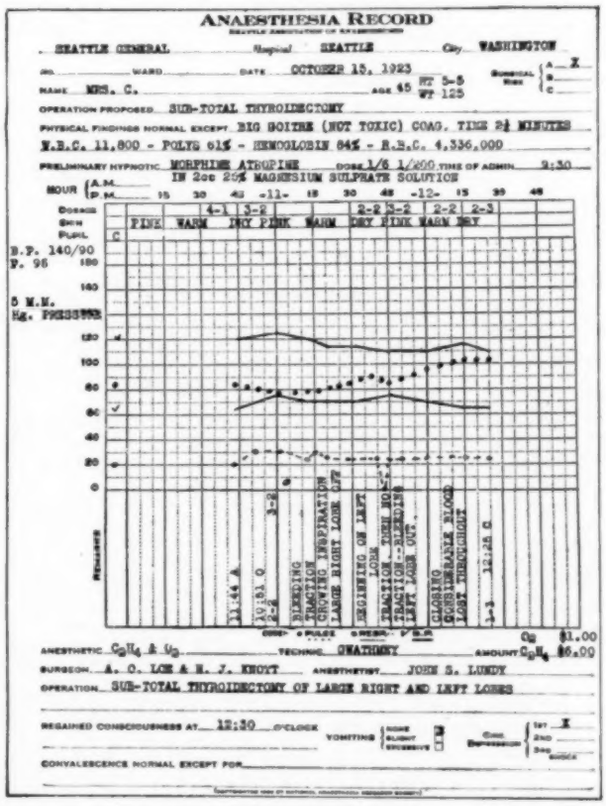
or exhaust patients as much as most anesthetic agents.[8] Without rebreathing, the patient's skin usually remains dry. The sweating caused by rebreathing may be controlled by the administration of atropin. In many instances, ethylene is the happy medium between nitrous oxid and ether, and, as such, has a peculiar and definite place of its own, with most of the advantages and few of the disadvantages of each of the other two agents.

The disadvantages coincident with ethylene anesthesia are few. The chief one is inflammability, which is probably no greater than that of ether.[9] The odor is usually considered to be unpleasant, either by the patient or by some one else in the operating room. This difficulty may be overcome, so far as the patient is concerned, in several ways: (1) by adding an agreeable scent to the gas as it passes through the mixing chamber; (2) by using a dilute mixture of ethylene and oxygen for induction, and (3) by using nitrous oxid and oxygen induction with ethylene and oxygen maintenance.[10] The operating room staff quickly becomes accustomed to the odor of the gas. Headache may occur after ethylene anesthesia, as it occasionally does after nitrous oxid anesthesia. Nausea and vomiting are not uncommon after ethylene anesthesia, but are usually mild, and of short duration. Irritation of the respiratory passage is uncommon, but there may be a little with prolonged rebreathing. Sometimes between the second and fourth minutes, and occasionally later in the course of the anesthesia, respiration may be temporarily inhibited. Cyanosis rapidly develops, and must be checked by the administration of oxygen. Excessive oozing may accompany ethylene anesthesia, but is not always present. Ethylene and oxygen give poor relaxation in cases of acute peritonitis. This difficulty is overcome by the addition of a small amount of ether to the mixture (1 fluidounce [30 c.c.] or less, each hour [11]). Ethylene, oxygen and ether afford as satisfactory relaxation as can be obtained without using spinal anesthesia.

Up to May 6, 1924, ethylene and oxygen, or ethylene, oxygen and ether, with or without hypnotics, had been given to 2,000 patients at the Mayo Clinic. In general, there was little in this larger series, according to Sistrunk, to contradict the conclusions drawn from the smaller series of patients that I observed in Seattle. A cautery was used occasionally, until an explosion [12] occurred when an electric cautery was used in the axilla and the gas in the vicinity ignited. There had been a leak from the mask. A very slight burn of the patient's face was the only bad result. Ethylene should not be used in the presence of a cautery. In this series, the Ohio monovalve machine was used.

I do not believe that ethylene and oxygen alone are sufficient for all routine operations.[13] Something must be added in many cases to give the anesthetist better control of the patient, by increasing the margin of anesthesia. A preliminary hypnotic may suffice to keep the patient quiet, so that nothing but ethylene may be needed. A slight local anesthesia is often sufficient reinforcement to render ethylene and oxygen perfectly satisfactory.

Cyanosis should have no place in routine anesthesia.[14] It automatically characterizes the procedure as unnatural. The normal person is adjusted to respire a mixture that contains 20 per cent. oxygen; it is, therefore, unfair to subject the invalid to mixtures less rich in oxygen than ordinary air. Oxygen starvation, even though of but a few moments' duration, is the cause of many unpleasant postanesthetic symptoms. Ethylene with 20 per cent. oxygen may not give satisfactory relaxation, but rather than reduce the percentage of



Anesthesia record in Case 1.

oxygen, something should be added, such as morphin a local anesthetic or ether. There is more synergy between ethylene and ether than between nitrous oxid and ether. More oxygen can be added to ethylene without upsetting anesthesia than can be added to nitrous oxid. I believe that ethylene will replace nitrous oxid to a very great extent, but not altogether. Poor risks, as a rule, relax satisfactorily with a mixture of 75 per cent. ethylene and 25 per cent. oxygen, and in them the optimal result is obtained. It is, therefore, in the case of the weak patient and the poor risk that the advantages of ethylene are most strikingly demonstrated.

There is, as yet, no one anesthetic agent that is uniformly satisfactory in every instance; however, ethylene is a valuable addition to the present list.[15] It neither entirely supplants nitrous oxid and ether, nor do they,

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9. Brown, W. E.: Explosibility of Ethylene Mixtures, J. A. M. A. **82**: 1039-1040 (March 29) 1924.

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11. Stehle, R. L., and Bourne, W.: The Anesthetic Properties of Pure Ether, J. A. M. A. **79**: 375-376 (July 29) 1922.

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14. Leake and Hertzman (Footnote 8).

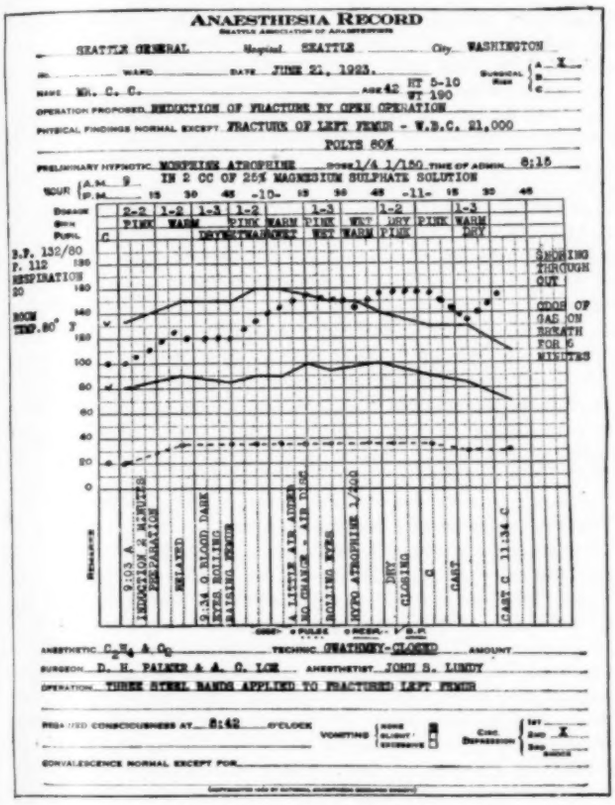
15. New Anesthetics: Ethylene and Acetylene, editorial, J. A. M. A. **80**: 1383-1384 (May 12) 1923. Ethylene-Oxygen Anesthesia, editorial, South. M. J. **16**: 888-889, 1923.

Results of Observations *

	Combinations	Cases, per Cent.	Cases	Physicians	Hospitals	Cautery	Strain or Vomiting: During Operation Only	Strain or Vomiting: During and After	Postoperative Vomiting: None	Postoperative Vomiting: Slight	Postoperative Vomiting: Excessive	Risk: A	Risk: B	Risk: C	Circulatory Depression: 1	Circulatory Depression: 2	Circulatory Depression: 3 Shock	Circulatory Depression: None	Blood Pressure: High	Blood Pressure: Medium	Blood Pressure: Low	Classification of Operations: Head	Classification of Operations: Neck	Classification of Operations: Chest	Classification of Operations: Intra-Abdominal	Classification of Operations: Extra-Abdominal	Classification of Operations: Extremities	Classification of Operations: Bone	Classification of Operations: Perineal	Classification of Operations: Laparotomy and Vaginal	Classification of Operations: Kidney	Sex: Male	Sex: Female	Age, Years: Lowest	Age, Years: Highest	Death, Postoperative	Lowest per Cent. Hemoglobin
Ethylene and Oxygen in Small Amounts †																																				
Preliminary hypnotic in magnesium sulphate	1	7.3	13	5	4	..	3	3	9	4	..	10	3	..	7	4	..	2	1	11	1	..	7	..	4	..	..	..	1	1	..	3	10	20	74	1	59
Preliminary hypnotic in water	2	3.7	6	6	5	..	..	..	5	1	..	4	2	..	4	1	..	1	1	5	..	1	2	..	2	..	..	..	1	1	..	1	5	16	57	..	45
No preliminary hypnotic	3	2.4	4	4	2	..	..	..	2	2	..	3	..	1	2	..	..	2	..	4	..	1	..	..	1	1	..	..	1	..	..	2	2	5m	52	1	81
Ethylene and Oxygen																																				
Preliminary hypnotic in magnesium sulphate	4	7.1	12	8	5	..	2	..	9	3	..	11	1	..	4	2	..	6	..	11	1	..	2	2	2	3	1	1	..	2	..	6	6	20	61	..	80
Preliminary hypnotic in water	5	17.8	30	22	10	1	..	..	23	7	..	23	5	2	10	4	3	13	5	25	..	1	..	..	14	4	4	3	2	5	2	10	20	2	82	3	38
No preliminary hypnotic	6	14.3	24	17	10	1	4	4	17	7	..	13	10	1	9	2	..	13	5	18	1	7	1	2	9	1	..	..	4	1	..	12	12	16d	75	1	72
Ethylene, Oxygen and Local																																				
Preliminary hypnotic in magnesium sulphate	7	1.2	2	1	1	..	..	..	1	1	..	2	..	..	1	1	..	..	..	2	..	..	2	..	..	..	..	..	..	..	1	..	2	2	28	42	..	87
Preliminary hypnotic in water	8	4.7	8	7	5	..	3	2	5	3	..	5	2	1	4	1	..	3	2	5	1	..	1	..	..	..	..	..	..	..	..	..	2	6	18	74	..	69
No preliminary hypnotic	9	0.59	1	1	1	..	1	1	1	..	..	1	..	..	..	..	..	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	1	58	58	..	89
Ethylene, Oxygen and Ether																																				
Preliminary hypnotic in magnesium sulphate	10	4.2	7	4	2	1	2	1	5	1	1	6	1	..	3	..	..	4	..	7	..	..	..	..	6	..	..	..	..	1	..	1	6	15	56	..	79
Preliminary hypnotic in water	11	9.5	16	12	4	2	1	..	9	7	..	11	5	..	10	3	1	2	1	13	2	1	..	..	10	1	..	..	..	3	1	3	2	16	65	..	..
No preliminary hypnotic	12	2.9	5	5	5	..	1	..	4	1	..	4	1	..	2	..	1	2	1	4	..	1	..	..	1	2	..	..	1	..	..	..	2	6m	55	..	..
Ethylene, Oxygen and Nitrous Oxid																																				
Preliminary hypnotic in magnesium sulphate	13	0.59	1	1	3	..	1	..	1	..	..	1	..	..	..	..	..	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	1	24	24	..	90
Preliminary hypnotic in water	14	5.3	9	6	3	..	1	..	3	2	..	3	2	..	1	3	..	5	2	7	..	..	1	..	5	3	..	..	1	..	..	..	1	22	74	..	55
No preliminary hypnotic	15	2.4	4	4	3	..	1	1	1	3	..	3	1	..	1	1	..	2	..	4	..	2	..	..	1	..	1	1	..	..	..	..	2	9	70	..	55
Ethylene, Oxygen, Nitrous Oxid and Spinal																																				
Preliminary hypnotic in magnesium sulphate	16	1.2	2	1	1	..	1	1	1	1	..	1	1	..	1	1	..	..	1	1	..	..	..	..	2	..	..	..	..	..	..	..	2	40	42	..	73
Ethylene, Oxygen, Nitrous Oxid and Local																																				
Preliminary hypnotic in magnesium sulphate	17	1.9	3	2	2	..	2	..	3	..	..	1	2	..	1	1	..	1	..	3	..	..	2	..	1	..	..	..	..	..	..	..	3	25	42	..	..
Ethylene, Oxygen, Nitrous Oxid and Ether																																				
Preliminary hypnotic in water	18	6.5	11	11	4	..	5	1	10	1	..	9	2	..	5	2	..	4	1	10	..	..	..	..	5	1	2	2	..	2	..	3	8	25	72	..	80
No preliminary hypnotic	19	2.9	5	4	2	..	3	..	5	..	..	4	1	..	2	..	..	3	1	4	..	..	..	..	2	..	..	..	..	3	..	1	4	33	58	..	80
Tonsillectomies	..	1.2	2	1	1	..	..	..	1	1	..	2	..	..	..	..	..	2	..	2	..	2	..	..	..	..	..	..	..	2	..	2	..	..	..	..	..
Extraction of teeth	..	1.9	3	2	2	..	..	..	3	..	..	2	..	1	..	..	..	3	1	2	..	3	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..
Totals	19	...	168	70	18	5	82	14	122	45	1	123	39	6	67	26	5	70	23	139	6	19	23	4	67	18	8	7	10	20	4	63	105	16d	82	6	..
Percentage of total cases	11	...	..	..	..	2.9	19	8	72.6	26.7	0.59	73.2	23.2	3.7	39.8	15.4	2.9	41.7	13.7	82.7	3.7	11.3	13.7	2.3	39.8	10.7	4.7	4.2	5.9	11.9	2.4	37.5	62.5	..	..	3.7	..

* Seattle cases.
† Small amounts of ethylene and oxygen were administered intermittently between nitrous oxid-oxygen and nitrous oxid-oxygen-ether anesthesias.

in turn, suffice in the fulfilment of all the requirements of anesthesia. The method recently employed at the Mayo Clinic in the management of obstetric cases illustrates how ethylene may be blended with other anesthetic agents to produce the desired effect at the proper moment; for example, during the part of labor when the cervix is being dilated, the action of nitrous oxid and oxygen is more satisfactory than that of other agents, in my hands. As the head comes to rest on the


ANAESTHESIA RECORD
SEATTLE GENERAL Hospital SEATTLE City WASHINGTON
DATE JUNE 21, 1923.
OPERATION PROPOSED REDUCTION OF FRACTURE BY OPEN OPERATION
PHYSICAL FINDINGS NORMAL EXCEPT FRACTURE OF LEFT FEMUR - W.B.C. 21,000
POLYS 80%
PRELIMINARY HYPNOTIC MORPHINE ATROPHINE TIME OF ADMIN. 8:15
IN 2 CC OF 25% MAGNESIUM SULPHATE SOLUTION
ANESTHETIC C2H4 & O2 TECHNIC GWATHMEY-CLOSED AMOUNT
SURGEON D. H. PALMER & A. C. ICE ANESTHETIST JOHN S. LUNDY
OPERATION THREE STEEL BANDS APPLIED TO FRACTURED LEFT FEMUR
REGAINED CONSCIOUSNESS AT 8:42 O'CLOCK
CONVALESCENCE NORMAL EXCEPT FOR

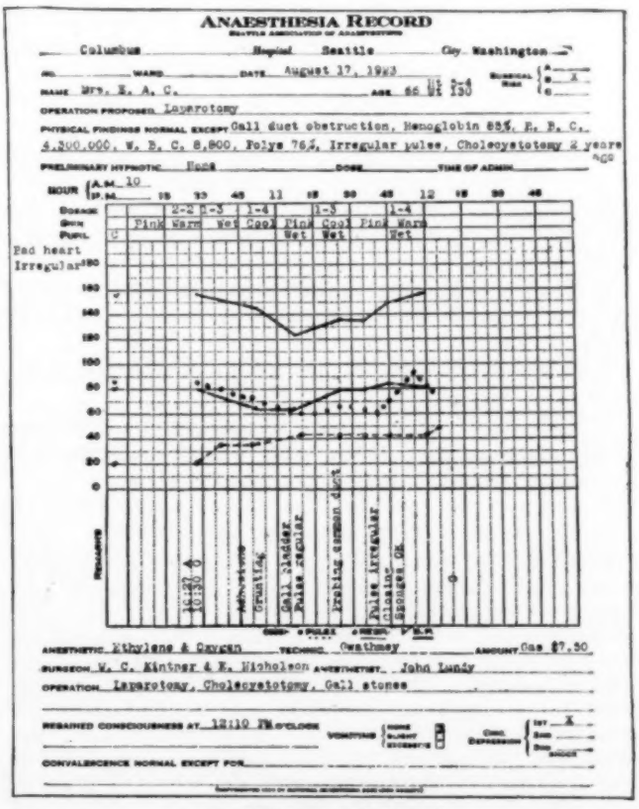
Anesthesia record in Case 2.

perineum, and the pains are reinforced by voluntary effort, a small amount of ethylene may be added to the nitrous oxid with good effect. Analgesia is thus produced without cyanosis. As labor progresses and bulging occurs, the anesthesia is shifted to ethylene and oxygen only, with about 15 per cent. oxygen in the mixture, which suffices for this period. A rather concentrated mixture of ethylene and oxygen is used as the head is delivered; about 5 to 10 per cent. is oxygen. Real anesthesia can be produced quickly with this mixture. Pains can be terminated rapidly, and extensive lacerations prevented. Oxygen may be given for a few moments after the birth of the head. The baby cries almost immediately on delivery.[16] Respiration does not, I believe, begin too soon. If episiotomy has been performed, anesthesia may be recommenced and the repair accomplished without difficulty. Occasionally, the pains cannot be relieved immediately with ethylene and oxygen alone, but all will yield to a combination of ethylene, ether and oxygen. Very little ether is used in such cases. The combinations mentioned have been successfully employed in thirteen obstetric cases at the Mayo Clinic, and in three obstetric cases in Seattle. About one half of the patients thus anesthetized will vomit once; no further nausea or vomiting occurs, with the stomach empty. A gas machine with more than two controls is necessary in order to produce these fine shades of anesthesia. The necessity for blending is recognized in other fields, such as metallurgy, painting and music. The blending of anesthetic agents is equally natural and necessary[17] and may be obtained with the Seattle model of the Gwathmey apparatus, which is economical and efficient in its use of the gases. One may average about 50 gallons (210 liters) of ethylene to the hour with it. It has four separate controls, and thus nitrous oxid and oxygen may easily be used with or without ethylene.

ABSTRACTS OF ILLUSTRATIVE CASES[18]

CASE 1.—A patient with a large goiter was given ethylene with a preliminary hypnotic in magnesium sulphate. At 11:43 a. m., respiration ceased momentarily, owing to traction on the trachea (Fig. 1). At such a time, much less difficulty is experienced with ethylene than with nitrous oxid and oxygen. This is a very satisfactory curve for a goiter case, and the blood pressure and pulse curves in the first hour may be considered the average, or normal, and may be used for comparisons.

CASE 2.[19]—A patient with two fractures of the right femur was given ethylene and oxygen with a preliminary hypnotic in magnesium sulphate. The fractures were reduced by open operation. The cardiovascular balance is unusually good, in view of the length of the operation and the amount of manipulation (Fig. 2).


ANAESTHESIA RECORD
Columbus Hospital Seattle City Washington
DATE August 17, 1923
NAME Mrs. E. A. C.
OPERATION PROPOSED Laparotomy
PHYSICAL FINDINGS NORMAL EXCEPT Gall duct obstruction, Hemoglobin 88%, R. B. C. 4,200,000, W. B. C. 8,800, Polys 76%, Irregular pulse, Cholecystotomy 2 years ago
PRELIMINARY HYPNOTIC None DOSE TIME OF ADMIN.
Bad heart Irregular
ANESTHETIC Ethylene & Oxygen TECHNIC Gwathmey AMOUNT Gas $7.50
SURGEON W. C. Kintner & E. Nicholson ANESTHETIST John Lundy
OPERATION Laparotomy, Cholecystotomy, Gall stones
REGAINED CONSCIOUSNESS AT 12:10 P.M. O'CLOCK
CONVALESCENCE NORMAL EXCEPT FOR

Anesthesia record in Case 3.

CASE 3.[20]—Ethylene and oxygen only were administered advantageously to a bad cardiac risk, suffering from obstruction of the common duct, and laparotomy was satisfactorily

16. Heaney (Footnote 12).

17. Cotton, J. H.: Anesthesia from Commercial Ether Administration and What It Is Due To, Canad. M. A. J. **7**: 769-777 (Sept.) 1917; Cotton Process Ether and Ether Analgesia, Am. J. Surg. (Anesthesia Supplement) **33**: 34-42 (April) 1919. Dale, H. H.; Hadfield, C. F., and King, H.: Anesthetic Action of Pure Ether, Lancet **1**: 424-429 (March 3) 1923.

18. A reproduction of the anesthetic record for each case may be found in the articles mentioned.

19. Lundy (Footnote 13).

20. Christiansen, J. F.: Clinical Experiences with Ethylene-Oxygen Anesthesia in Dentistry, Dental Cosmos **66**: 346-351, 1924.

performed. This picture is one commonly seen when ethylene is used, that is, a slight slowing of the pulse rate and a corresponding lowering of the diastolic blood pressure (Fig. 3).

The accompanying table is a compilation of the data gathered from the records of 163 patients operated on under ethylene, administered with the Seattle model machine, in Seattle, and of data from two cases of tonsillectomy, and three cases of extraction of teeth in which records were not kept. A special Heidbrink apparatus was used for tonsillectomies and extraction of teeth.[21] It may be noted that ethylene was used in nineteen different combinations and that the work of seventy surgeons in thirteen different hospitals is represented, in itself an exacting test for any anesthetic agent. There was some straining during operation in 19 per cent. of the cases, no postoperative vomiting in 72 per cent., slight vomiting in 26 per cent., and excessive vomiting in 0.5 per cent. Shock developed in less than 3 per cent. of the cases. At the close of operation, 82 per cent. of the patients were in excellent condition, notwithstanding the fact that only 73 per cent. were good risks. The operations in this series are representative of those commonly performed in general surgery. The youngest patient was 16 days old, and the oldest, 82 years. There were no anesthetic fatalities or near fatalities. Six of the patients were very desperate risks; only two of them died following operation. In the entire series, six patients died during the convalescent period of two weeks. None of these deaths could be attributed to the anesthetic; it had, in fact, prolonged life.

CONCLUSIONS

1. Ethylene is used to advantage in nearly all types of surgical risks, particularly in bad risks.
2. Cardiovascular balance is less disturbed by ethylene than by other general or local anesthetic agents commonly used.
3. Nitrous oxid, ether, a local anesthetic and morphin may sometimes be effectively used in conjunction with ethylene.
4. Administration is facilitated by a machine with more than two controls.
5. The status of ethylene cannot yet be definitely determined; further study and experimentation are essential.

ABSTRACT OF DISCUSSION

DR. ISABELLA C. HERB, Chicago: As we were the pioneers in the administration of ethylene, we can be excused, perhaps, for being a little too enthusiastic. I feel that as it has been pointed out before that ethylene is not more inflammable than ether and, perhaps, if the same precautions were taken as are taken when ether is being administered, there would be no accidents. As there may be explosions, we have one machine in which there is a nitrous oxid tank, and we use that one machine when the cautery is used or when there is to be any spark, such as in diathermy or fulguration. That is the only time we use nitrous oxid. I fail absolutely to see any advantage of combining nitrous oxid with ethylene. I can do everything with ethylene that any one else can do with nitrous oxid. I do not mean by this that we are using ethylene for everything. We are using it for everything except for operations in the upper abdomen, on the bile tract and on the stomach. We have had more than 4,000 cases. None of our patients have had premedication, so that our results are due to ethylene alone and not to the premedication such as is given when nitrous oxid is used. It is true that once in a while we have switched in ether for a half dozen inhalations maybe for five or ten minutes, and then continued with the ethylene. We have done that when we were using a bad tank of ethylene. As to vomiting: that seems to be due to the supply of ethylene. Occasionally we get a tank with which there will not be a case of vomiting. Maybe with the next tank, more than half the patients will vomit. We have noticed that when there is considerable vomiting there is considerable odor; hence we can tell when the patients are going to vomit. Pure ethylene is practically odorless. As to the inflammability of ethylene: Experiments have shown that only when much oxygen is mixed with ethylene will an explosion occur. A 50 per cent. mixture is safe. As to the effect on the respiratory tract, we have had no bad effects. I have given ethylene to patients with acute cold, in the acute stages of tuberculosis of the lung and with pneumonia, and have seen no irritation. That may be due to the fact that I do not use rebreathing. If I cannot control a patient with ethylene and 10 per cent. oxygen, then I switch to ether. Young children take ethylene very well. Septic and anemic patients require a great deal of oxygen. Ethylene can be given to elderly men with prostatic trouble. There is hardly any physical condition that will contraindicate the use of ethylene. I cannot agree with Dr. Lundy that ethylene will not replace nitrous oxid. I believe it is going to replace nitrous oxid completely. In labor cases we have done very well with ethylene anesthesia.

DR. N. S. HEANEY, Chicago: I agree entirely with Dr. Lundy's discussion and experiences. I have given particular attention to the odor of ethylene, and I am not able to smell the gas during its use. We have had two explosions with ethylene, both due to static sparks. Both occurred in the delivery room, where the intermittent use of the gas gives greater opportunity for static ignition. I think that they can be prevented by proper insulation.

DR. CARL HENRY DAVIS, Milwaukee: In 1917 I presented a paper before this Association giving the results of a comparative study of nitrous oxid, chloroform and ether. During the past year I have repeated the experiments, using ethylene and oxygen, and have compared my results with those previously obtained. In the first place, I could demonstrate with ethylene that it is possible to kill the young in utero without killing the mother; that the pregnant near term are much more susceptible to anesthesia than those in early pregnancy, and that a greater oxygen requirement is needed. I could not with ethylene produce the fatty degeneration in the liver which occurs following chloroform, even chloroform given with pure oxygen and for periods not to exceed thirty minutes. I found that with long-continued and repeated administrations of ethylene there is some loss in staining power of the central liver cells but without fatty degeneration, merely showing a slight edema, which Dr. Bunting believes is due to the lowering of the oxygen content over a considerable period and without any permanent injury to the cell. I have kept some of the animals under observation for periods of three months after administration of the anesthetic, and as a result of this experimental work and a comparison with former observations, my feeling is that if I were to take a general anesthetic tomorrow for a major operation, ethylene would be my choice. Under no circumstances could you give me chloroform, and if it were for a major operation I would seriously object to any one, even the most expert, trying to keep me anesthetized with nitrous oxid and oxygen. In experimental work on animals I have repeatedly shown with groups of animals that with the oxygen percentage low enough to maintain deep anesthesia with nitrous oxid, certain of these animals will go bad and occasionally an animal will die suddenly. I believe with Dr. Herb that the probabilities are that ethylene will eventually completely supplant nitrous oxid. Unlike Dr. Herb, I believe it is advisable to use a preoperative hypodermic of morphin. It has been our experience that in approximately four minutes these patients are ready for abdominal section. If we are using ethylene-oxygen in obstetrics, a fewer number of inhalations must be given because it produces greater relaxation and tends to cause a cessation of the pain such as occurs with ether.

DR. A. B. LUCKHARDT, Chicago: It is a source of gratification to Mr. Carter and to me to hear such good things about ethylene coming from another clinic. It was always our

21. Lundy, J. S.: Keeping Anesthetic Records: What They Show, Am. J. Surg. (Anesthesia Supplement) **38**: 16-26 (Jan.) 1924.

hope that this gas would be used early in other clinics in order that what personal feeling there might be in connection with its use might not cloud the scientific value of the gas. It is therefore particularly gratifying that Dr. Lundy's experience with it has been so good. Early in the scientific investigation of the gas we had in mind its possible use in cachectic patients. Dogs that were in a bad state of nutrition showed no deleterious effects as the result of its administration. I recall one experiment in which a cachectic dog was anesthetized fifteen times in twenty-one days for three quarters of an hour at a time and showed no ill effects. As a matter of fact, because of better care in the laboratory and better food he managed to gain 6 pounds (2.7 kg) during that period. It seemed probable at that time that it would be possible to use ethylene gas under conditions when ether and other so-called safe anesthetics would be contraindicated. Dr. Kretschmer and I have stated that its use in genito-urinary surgery under conditions that were most trying gave no deleterious effects. It was particularly gratifying to have Dr. Lundy report that it could be used with no deleterious effect in cachectic infants of 14 or 15 days of age. I say, again, it is very gratifying to look back on the published statements that we made with great reservation and find that no one so far has found it necessary to pass any unfavorable comment or take exception to any one of them. I hope to see as a result of further research and experiment the discovery of a product, whether by investigation here in Chicago or elsewhere, which in its action will have even greater desirable properties than ethylene, for no anesthetic is too good for mankind. At present, ethylene is quite superior to nitrous oxid, and is as adequate in most instances and always more desirable than ether.

DR. WILLIAM F. HEWITT, Chicago: I can only reiterate what Dr. Heaney said in emphasizing the results that Dr. Lundy found in labor; that is, that in labor ethylene is a second stage and not a first stage anesthetic. It is best given when the head is about going over the perineum, either alone or with ether. In the first stage, with the dosage we have so far used, it inhibits the progress of the labor, except, possibly, in that type of the first stage which is characterized by a spastic cervix. In that case, there is not so much delay and, perhaps, it supersedes the use of chloral and morphin. Otherwise nitrous oxid is much better as a first stage anesthetic; but it should be remembered that in the second stage nitrous oxid must have the addition of ether, and so ethylene is better. In the third stage, there is some tendency to hemorrhage with ethylene; not great, but a little more than usual. On the other hand, in a case of perineorrhaphy following labor, the chances of keeping the patient quiet are a little better with nitrous oxid. There is less contamination in the third stage by using a more relaxing anesthetic, such as ether. The future anesthetic machine will be along the lines of the one used by Dr. Lundy; that is, there will be a few anesthetics ready for instant use.

DR. JOHN S. LUNDY, Rochester, Minn.: I have been taken to task a good many times by my former instructor, Dr. Herb, and so I was very sure that she would find something to criticize me for today. However, this is a discussion of technic, and unless I lay before you the method in its entirety I would not be giving a complete presentation; this is my reason for mentioning the machine. The Mayo Clinic has no commercial interest in any machine of any kind. I have attempted to present the results of these anesthetics as I have observed them in two different places, with very accurate records of pulse, blood pressure, respiration, color, warmth and moisture. I felt that the results in the two clinics, with records of nineteen combinations of anesthetics, might be of interest, for, as Dr. Herb has said, in some clinics they use ethylene-oxygen alone and in others they use ethylene-oxygen with a preliminary hypnotic. It has been difficult in this comparative study of ethylene anesthesia to present statistics from Rochester and statistics from Seattle without confusing them. In the surgical work at the Mayo Clinic, they use ethylene-oxygen and little or no nitrous oxid. Ethylene-oxygen was used with or without ether and with or without preliminary hypnotics in 2,000 operations; these data I have reported. I mentioned a method that has recently been employed in the Section on Obstetrics but not elsewhere in the Mayo Clinic, and found, exactly as Dr. Hewitt has said, that in the first stage of labor better control is obtained with nitrous oxid and oxygen than with ethylene. Obstetricians will be interested to know that in using this combination of nitrous oxid, oxygen and ethylene in the third stage of labor, it has been possible to keep these patients asleep, and to control the pains by varying the anesthetic mixture. Of the three agents, nitrous oxid is the weakest and ether the strongest, ethylene being about midway between. The data I have reported here are given for their face value. I am not trying to sell anything, either in the line of a machine or of a gas.

Clinical Notes, Suggestions, and New Instruments

A CASE OF RAYNAUD'S DISEASE INVOLVING THE FEET, THE LEFT RETINA AND THE HEART WALL

CLYDE E. SHINKLE, M.D., CINCINNATI

This case is reported because of the distribution of the involved parts and the opportunity of direct observation of the process during life.

REPORT OF CASE

Mrs. J. E. Q., white, aged 44, referred to me, Aug. 21, 1923, by Dr. Clarence J. Broeman, complained of extreme pain in the feet and ankles. The family history was irrelevant.

She had had ordinary childhood ailments. At 16 she was married, and at 18 was left a widow with two children, by the murder of her husband. At this time, she had attacks of pain in the left chest, radiating down the left arm. This could be relieved only by morphin, which she took occasionally for a year. She lived well on inherited money. At 24, she had malaria, at which time what may have been a cellulitis of the right lower leg occurred. At 40, she married a man who had had syphilis but now showed a negative Wassermann reaction. At 41, a goiter was removed because it was affecting the heart. At this time a question of tuberculosis was raised, and was left undecided by consultants. The thyroidectomy resulted in great benefit. The menstrual and marital history was negative, except for a vaginal discharge, noticed for the last few months.

The illness complained of began suddenly, after a period of nervous stress from financial and family worries. The patient awoke at night, finding her right foot pale, cold and numb. The next day the left foot was similarly affected. There was severe pain in both, made worse by heat. For two weeks the patient had obtained relief only from morphin. Physical examination was difficult because of the patient's extreme restlessness and irascibility. The pain in the feet was severe. They were very tender to the touch, and cold. No pulse could be found about the ankles. In appearance, the area, about the size that a sock would cover, was not unlike the pale area one sees around the site of a hypodermic injection of suprarenal extract.

The general examination threw no light on the trouble complained of. Positive findings included slow pupils, the scar of the goiter operation, old scar findings in the right upper chest, and a soft, systolic bruit at the apex, not transmitted. Excepting for the pupils, the neurologic examination was negative. There was a vaginal discharge, and a mass was felt to the left of a not freely movable uterus. This was thought to represent an old salpingitis.

The patient was sent to the hospital, and was given large doses of potassium iodid by mouth, with the idea of reducing the viscosity of the blood. The substitution of other drugs for morphin produced withdrawal symptoms. On the third day in the hospital, the left eye suddenly became blind, though the pupil still reacted. Dr. F. H. Lamb found the retinal arteries uniformly shrunken, and believed that the process in the retina was the same as that in the feet. The experiment of giving amyl nitrite by inhalation was tried. The arteries in the left retina would dilate under the influence of the drug,

and would shrink as the effect of the drug wore off. This observation was confirmed by Dr. Louis G. Heyn. Accordingly, the patient was given 2 c.c. of a 2 per cent. solution of sodium nitrite by hypodermic injection, twice a day. This gave great relief, but the pain did not entirely stop. On the fifth day in the hospital, an abortive attack of pneumonia in the right upper lobe came on. This lasted three days, and ended by crisis. During these three days the patient was kept quiet with morphin. On its withdrawal, she again had withdrawal symptoms. These cleared up and the patient slowly improved. September 2, she went home on a stretcher, attended by a nurse.

The urine contained albumin and casts, as well as pus cells and epithelial cells. During exacerbations of pain, it contained hemoglobin. On several tests, it contained iodin, proving the absorption of the drug. The sputum contained no tubercle bacilli. The blood Wassermann reaction was negative. The blood pressure was about 150 systolic during exacerbations of pain, and would drop below 130 when the patient was comfortable. The pulse pressure was always between 40 and 50.

After leaving the hospital, the patient gradually improved. Vision slowly returned to the left eye, but it never became clear. There were relapses of pain. During this time, several measures were tried, including passive hyperemia, the administration of thyroid extract, prolonged hot baths and massage. The only definite relief was obtained with sodium nitrite, and any stopping of the potassium iodid seemed to lead to a fresh attack of pain. In about six weeks, the patient was sitting up and beginning to walk. The administration of sodium iodid by intravenous injection was started, to spare the stomach some irritation. October 5, about 8:30 a. m., she was given 30 grains (2 gm.) of this drug, the same syringe, technic, and solution as had been used before without accident, being employed. She felt well until noon, when she suddenly had a typical attack of angina pectoris. She rallied well from the inhalation of amyl nitrite. At 6 p. m., Dr. Oliver P. Holt and I found the pulse regular and the heart tones good. There was some shortness of breath. Her complaints did not seem warranted by anything that we could find. At 6:45 she was dead. No necropsy was done.

SUMMARY

A case of Raynaud's disease or arteriospasm, involving the feet, the left retina and the heart wall, afforded an opportunity to watch the actual process in a living artery through an ophthalmoscope, and to see the good effect of amyl nitrite on the arteriospasm. The patient was benefited by large doses of potassium iodid by mouth, and by the hypodermic administration of sodium nitrite. Hemoglobinuria and a moderate rise of systolic and diastolic blood pressure accompanied exacerbations of the trouble. Nervous instability and shock may have played a rôle in the sequence of events, in this and some other illnesses of this patient.

34 West Seventh Street.

GLOVER'S MANGE CURE FOR DISEASES OF THE SCALP OR LOSS OF HAIR

MURRAY P. WHICHARD, M.D., EDENTON, N. C.

Miss J. R. W., a schoolteacher, aged 23, purchased a bottle of Glover's Mange Cure, a preparation manufactured by the H. Clay Glover Company, Inc., located at 127-129 West Twenty-Fourth Street, New York City. The bottle contained the following directions: "When used for disease of the scalp or loss of hair from the human head, apply daily, rubbing gently into the scalp, using either a soft brush or the hands."

The purchaser used the preparation according to directions, applying it to the scalp and rubbing it in thoroughly. Then, wrapping a turkish towel about her head, she slept for a couple of hours. When she awoke, a dead feeling was present in the scalp and neck; this feeling extended to the ears, which, in addition, were badly swollen and congested. She washed her head at once with soap and water without any apparent relief, and when repeated washings failed to give results, I was called about 12 o'clock at night to give treatment.

I found the patient in a rather serious condition; her entire scalp was badly swollen and thickened; the right eye was closed because of congestion of the tissues, and both ears were so badly thickened and swollen that they looked as if they would break if roughly handled. A number of blisters also had been produced by the powerful irritant. I washed the scalp, ears and face with alcohol and, after satisfying myself that all the irritant had been dissolved and washed away, I applied petrolatum to sooth the affected parts. The patient was confined to her room five days as a result of the burn produced by the mange cure.

I am not induced to present this paper because of a desire to make known the treatment employed or the results obtained (which, I am glad to say, were very satisfactory). I am induced to write this account because of the appalling fact that a preparation of this nature is allowed on the market, to be sold to the public without explicit directions as to the amount to be used, and the steps to be taken in case of burn or marked irritation. It is plainly evident from the directions that no statement is made regarding the amount to be used, the length of time during which the preparation may be safely left on the scalp, the danger involved when it is not washed out, or what may be used to counteract possible irritation resulting from its use. The victim has every reason to believe that the preparation is absolutely safe, nontoxic and nonirritating. However, I am of the opinion that, if the patient had continued to use this product according to directions, she would have had neither hair nor scalp left.

CESAREAN SECTION ON A TRUE DWARF

JAMES W. MCCLARAN, M.D., JACKSON, TENN.

In searching the literature, I have been unable to find an instance in which the mother did not weigh at least 25 pounds (11.3 kg.) more than the one in this case, and all cases reported showed deformity in the mother other than her size. The ratio between the weight of the mother, 52 pounds (23.6 kg.), and that of the baby in the case, 7½ pounds (3.4 kg.), I think is very unusual. The mother in this case is of symmetrical build and of a high type of mentality, having formerly taught school.

Mrs. C., aged 32, white, was admitted to the hospital, April 24, 1924, and operation was performed the same day. The patient was having characteristic labor pains at time of admission. The family history was of no interest except for the fact that she is the only dwarf in the family and no history could be elicited of any, in tracing back.

The patient had a miscarriage at four months, June 20, 1923. She became pregnant again immediately afterward, and had an uneventful and easy pregnancy.

The patient was a well proportioned dwarf. No deformities of the bones were present. The patient's height was 44 inches (111.7 cm.); the weight before delivery was 52 pounds (23.6 kg.). The patient was very alert mentally. The abdomen showed what was apparently a full-time pregnancy. No fetal heart could be heard, but a souffle was heard just above the pubes, and fetal movements were elicited. The child was carried in the transverse position, which was the only position possible in a mother of her size. Cesarean section was done immediately, without a vaginal examination. The patient was delivered of a 7½ pound (3.4 kg.) male child in splendid condition and undeformed in any way. It had to be put on supplemental feedings at first, but these were found unnecessary after the fourteenth day. Mother and baby went home on the seventeenth day, after an uneventful convalescence. Later reports show both in splendid condition, and the baby gaining normally on breast milk alone.

The only case I have been able to find in which the height of the mother was less than the height of the mother in the foregoing case is one reported by Hellier.[1] Hellier's patient was 3 feet, 1 inch (94 cm.) tall, but she had curvature of the spine, her tibias were bent acutely in an anteroposterior direc-

1. Hellier: A Case of Cesarean Section in a Rachitic Dwarf, Brit. M. J. 1:16, 1923.

tion, and she was otherwise very much deformed. His patient weighed 72 pounds (32.7 kg.) after delivery, and the baby weighed 5½ pounds (2.5 kg.).

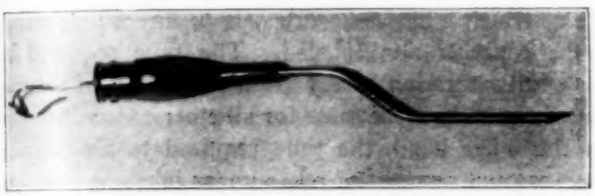
602 Peoples Bank Building.

NEW NEEDLE FOR INTRAVENOUS INJECTIONS*

J. L. WOLLHEIM, M.D., NEW YORK

In presenting this needle, I am fully aware that intravenous injections of arsphenamin or other medicament are usually given with all sorts of needles, and mostly with the straight ones. However, I have had so much satisfaction from the needle here described that I believe the few minutes necessary to study it will be well spent.

This needle is of the bayonet shape, with the bevel down and with a flat hub. The bayonet shape prevents rotation on the point as an axis. It also acts to make a concentric syringe, eccentric. The bevel, by being down, prevents to some extent the piercing of the posterior wall of the vein, and I believe this is very important. The flat hub also prevents rotation on a longitudinal axis.



Needle for intravenous injections.

It is made by Becton, Dickinson & Co. of iridioplatinum. It can be passed through the flame if plugged with blood or other materials and lasts practically for years. It is also being made of nickeloid, and takes a wire easily. It is made in all sizes for the Luer tips.

179 East Seventy-Ninth Street.

A NEW METHOD FOR THE REMOVAL OF FOREIGN BODIES IN THE EXTERNAL AUDITORY CANAL

O. JASON DIXON, M.D., KANSAS CITY, MO.

A mother recently brought her daughter, aged 9, to me for the removal of a cherry seed in the right ear canal, which had been there for ten months.

Various attempts at removal during this time had failed, and the youngster was quite sensitive with regard to any manipulation about the ear. A smooth, round, large cherry pit could be seen, which entirely filled the auditory canal, and was movable, but stayed close to the drum. Sudden movement of the head produced dizziness and a slight nausea, but no nystagmus.

The mother's description of previous unsuccessful attempts to remove this foreign body induced me to try a new method. I dipped a camel's hair brush in liquid glue and held it firmly against the cherry pit for a minute or two. Apparently, the warmth of the ear canal prevented the glue from setting, as there was no cohesion whatever.

Next I tried furniture glue, with the same results. I left not only the cherry pit behind, but also a considerable amount of glue, which was removed with difficulty.

Owing to the fact that the cherry pit had a hard, dry surface, I decided to try dental cement. This had the advantage of setting very rapidly, and it did not adhere to the surrounding tissues.

The cement was mixed in the usual manner, and, when fairly thick, the camel's hair brush containing a small lump of the cement was inserted into the ear canal, and held firmly against the cherry pit. This was held quietly for a couple of minutes, and withdrawn.

It was surprising how firmly the cement held to the seed as it passed through the external auditory meatus. There was no pain, and, aside from a red, inflamed drum, which condition rapidly cleared up, there was no further ear disturbance.

The advantages of a quick setting cement are obvious; there is less trouble in holding the child still, as it sets quickly, and does not cause any trouble if pieces break off in the ear canal.

Small pebbles, glass beads, or any hard substance which completely fills the auditory canal and impedes the passage of a small instrument beyond it, can be removed easily by this method.

917 Rialto Building.

* Presented before the Yorkville Medical Society, March 17, and Society for Clinical Study, March 25, 1924.

A SIMPLE EXPEDIENT FOR NEUTRALIZATION OF ALKALINE WATER

MAURICE N. RICHTER, M.D., NEW YORK

Polychrome stains give optimal results in solutions that are near neutrality. Alkaline solutions increase, and acid solutions decrease the intensity of the blue component of the stains. To obtain this neutrality, a number of expedients have been devised, depending mainly on the neutralization of the water, using appropriate indicators. Acid waters are frequently encountered, and their neutralization with weak solutions of alkalis, such as sodium or potassium carbonate, gives good results. For the correction of slightly alkaline distilled water, carbon dioxid will give satisfactory results. The simplest procedure is to utilize the carbon dioxid of the breath by blowing into the mouth of a bottle partly filled with the water to be corrected, and shaking well. If one uses a small (1 or 2 ounce) bottle, enough carbon dioxid will be absorbed, after blowing into the bottle three or four times, to neutralize most of the alkaline waters ordinarily encountered. Indicators are generally unnecessary, as there is little danger of overcorrection.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

PHENACAINE (See New and Nonofficial Remedies, 1924, p. 35).

The following dosage form has been accepted:

Holocaine Ointment-M. E. S. Co.: Holocaine, 1 per cent.; water, 1 per cent.; wool fat and petrolatum, 98 per cent. Put up in collapsible tubes, for application to the eye.

Prepared by Manhattan Eye Salve Co., Louisville, Ky.

New Attitude Toward Mind in Medicine.—If that view represents not merely the formulation of an ideal but a practical guide for action, what changes may we not witness during the next few years in medical education, medical practice and medical research! . . . In practice the isolation of the insane will be regarded as an absurdity of another age, having nothing but prejudice for its foundation. Suitable wards in our general hospitals will be as freely open to the mentally sick who desire to be cured as they are now to the physically sick. When mental phenomena are encountered in the study or treatment of disease, they will be as thoughtfully and frankly regarded as any other phenomena. Fear, anxiety, compulsive ideas, emotional disorders and anomalies of conduct and of feeling will be, in fact, and not merely by implication, medical problems. They will be studied from whatever angle the most light can be thrown on them, instead of being forced into traditional categories or ignored if this process requires too much violence for a gentle art. The charlatan . . . will be met by science in a field that he now claims for his own.—Thomas W. Salmon.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 2, 1924

THE BEHAVIOR OF ETHER IN THE BODY

Surgical anesthesia represents one of the triumphs of experimental medicine. The introduction of anesthesia became widespread so rapidly, and its practice has become so common, that the study of the scientific aspects of the procedure has scarcely kept pace with the growing use of anesthetic substances in medicine. Many novelties have been introduced, and the technic of administration has experienced almost innumerable innovations since the middle of the last century. Yet there is much about the pharmacology of the anesthetics that still demands explanation. After all, the success of anesthesia depends largely on the fact that some body cells are more susceptible than others to certain drugs. As Lee [1] expressed the situation, an anesthetic such as ether or chloroform is a depressant of living substance: when its administration is continued, it diminishes and may ultimately put a stop to vital action and cause death. It acts on all kinds of protoplasm and all varieties of cells and tissues, but in the early stages of its administration its action is more obvious on the brain than on other parts. Within the brain, it depresses first those cells whose activities are accompanied by consciousness and therefore by the recognition of pain. Next in order of paralysis comes the spinal cord, which contains the central nervous mechanism of most of our bodily movements. And lastly comes the medulla oblongata, in which lies, among other important nervous centers, the center that maintains respiration. The successful administration of an anesthetic for a surgical operation demands that just so much of the drug be given as is required by the brain cells and the cells of the spinal cord to banish consciousness and to produce relaxation of the muscles. With any amount beyond this, anesthesia approaches the danger point of stopping the breathing or the heart.

Ether still enjoys the largest popularity among the anesthetics, in this country at least; hence, all information about its properties will be eagerly sought by those who apply it in their professional work. The fate of ether, like that of all anesthetics in the body, is of foremost importance. The investigations of Haggard [2] at Yale University have demonstrated that ether is not destroyed or utilized by the body. It is all excreted unchanged. Approximately 90 per cent. of ether absorbed can be recovered in the expired air after the cessation of the administration. A certain small amount of ether may be eliminated through the skin, in the perspiration, and in the urine. The great mass of eliminated ether, however, finds its way into the expired air. The elimination of ether through exposed serous surfaces plays an unimportant part in the general elimination of ether. The solubility of this anesthetic in blood and in water is about the same.

According to further studies by Haggard,[3] under comparable conditions of respiration and circulation, the rate at which ether is absorbed is in direct proportion to the concentration inhaled. The time required to reach full saturation or any given percentage of saturation of the body is the same for all ether concentrations. On the other hand, the time required to absorb any given amount or mass of ether under inhalation of different concentrations is disproportionately rapid for the higher concentrations. The rate at which ether is absorbed or eliminated varies nearly, but not quite, in exact proportion to the volume of air breathed. The rate of blood flow has very little influence on the rate of ether absorption or elimination. The relatively great influence exerted by the volume of air breathed is occasioned by the high solubility coefficient of ether. The reverse relation exists with comparatively insoluble gases.

The recent studies [4] have made clear also that the ether concentration reached in the central nervous system, not that in the body as a whole, is the determining factor in the anesthetic action of ether. The central nervous system has a much larger blood flow than have other tissues. According to Haggard, when ether is absorbed it is distributed between a small bulk on which it has a physiologic action, the central nervous system, and a large bulk, the rest of the body, on which it has virtually no action. The body thus acts through its large capacity for ether as an enormous buffer to delay both induction of anesthesia and, later, the elimination of the anesthetic. Because of its large blood supply, the brain rapidly approaches saturation at the tension of ether in the arterial blood. The ether content of the blood from the internal jugular is an index of brain saturation, and runs only a little below that of the arterial blood. The mixed venous blood of

1. Lee, F. S.: Scientific Features of Modern Medicine, Columbia University Press, 1911.

2. Haggard, H. W.: The Absorption, Distribution and Elimination of Ethyl Ether, I, The Amount of Ether Absorbed in Relation to the Concentration Inhaled and Its Fate in the Body, J. Biol. Chem. **59**: 737 (April) 1924.

3. Haggard, H. W.: The Absorption, Distribution and Elimination of Ethyl Ether, II, Analysis of the Mechanism of Absorption and Elimination of Such a Gas or Vapor as Ethyl Ether, J. Biol. Chem. **59**: 753 (April) 1924.

4. Haggard, H. W.: The Absorption, Distribution and Elimination of Ethyl Ether, III, The Relation of the Concentration of Ether, or Any Similar Volatile Substance, in the Central Nervous System to the Concentration in the Arterial Blood, and the Buffer Action of the Body, J. Biol. Chem. **59**: 771 (April) 1924.

the right heart is an index of general body saturation. It approaches the arterial level very slowly. It is thus that the buffer referred to above retards the induction of anesthesia. The ether content of the arterial blood is the critical factor in determining the degree of anesthesia at the time. This factor bears no immediate relation to the total amount of ether that has been absorbed by the body.

In all considerations of the use of ether, it should be borne in mind that its vapor is an irritant. As Haggard [5] has reminded us, ether vapor elicits from the respiratory tract the response common to all respired irritants: it causes reflex coughing by laryngeal irritation and, under suitable conditions, inhibition of respiration; it produces increased mucus flow through the stimulation of the glands of the respiratory mucosa. Its irritant action on the cornea and conjunctiva is so well known as to require no comment. In order to induce rapid anesthesia, it has become customary to administer a concentration of ether vapor much higher than that necessary to maintain fully developed anesthesia. The objectionable features of such a procedure, which always invites irritant action, can be averted in large measure by lowering the concentration of ether used but increasing the volume of breathing through admixture with carbon dioxid, a respiratory stimulant. The same gas, used in small amounts, will subsequently facilitate elimination of ether when it is desired to terminate the anesthesia.[6] The Yale investigators assure us that it is entirely feasible by means of inhalation of dilute carbon dioxid to produce a fivefold increase in the volume of breathing. It remains to be seen to what extent the fundamental features here emphasized will find a useful place in the current practice of anesthesia.

5. Haggard, H. W.: The Absorption, Distribution and Elimination of Ethyl Ether, V, The Importance of the Volume of Breathing During the Induction and Termination of Ether Anesthesia, J. Biol. Chem. **59**: 795 (April) 1924.
6. White, J. C.: Deetherization by Means of Carbon Dioxid Inhalations, Arch. Surg. **7**: 347 (Sept.) 1923.

SENSITIZATION TO TUBERCULIN INDUCED BY DEAD TUBERCLE BACILLI

Among the obstacles to research is ready submission to dogma and unqualified acceptance of absolutism. The physician and the biologist are forced, by the very vastness of their subject, to attempt classifications based on sharp distinctions. Without such classification, medicine becomes chaotic. Recent investigations in the immunology of tuberculosis suggest that this frailty of the orderly mind may have converted into the absolute what was merely relative. It has been generally accepted for many years that typical tuberculin hypersensitiveness, as indicated by the skin test, cannot be produced without the presence of living tubercle bacilli in the body. It was, perhaps, not the intention of the numerous promulgators of this doctrine to set this idea in their readers' minds as a fixed and absolute law; but the instinct for simplifying, the inevitable reaction of the systematic person, has led teachers of tuberculosis to minimize the qualifications and magnify the fact. The writings of Calmette, Baldwin, Krause, Selter, Loewenstein, Coca and numerous others have led to the widespread conviction that hypersensitiveness to tuberculin is strictly a result of infection. The qualification almost invariably made by these writers and investigators, that a transient hypersensitiveness can be induced by the injection of dead tubercle bacilli, has been lost sight of in the emphasis accorded to the major phenomenon, the "hypersensitiveness of infection." The point is one of more than academic importance, for the relation of tuberculin hypersensitiveness and resistance to infection, as illustrated by the "Koch phenomenon," is unquestioned, and it would be a great error to discard dead tubercle bacilli absolutely as a possible immunizing agent on the ground that they do not sensitize, if, as recent results seem to indicate, they actually do.

In 1921, Zinsser [1] appeared to be convinced that the tuberculin reaction was a manifestation of hypersensitiveness induced almost strictly by infection only. In more recent experiments, in collaboration with Petroff,[2] the conclusion is reached that the hypersensitiveness caused by the injection of dead tubercle bacilli warrants serious consideration, and is not the unimportant, transient thing that most immunologists have assumed it to be. These authors find that typical hypersensitiveness can be produced in guinea-pigs by the injection of tubercle bacilli heated to 100 C.; that the sensitization appears almost as rapidly as after the introduction of living bacilli, and, furthermore, that the reaction induced in the animal so sensitized is quite as intense as in the infected animal. More recently, Petroff [3] has reported that sensitization, as indicated by a positive skin test, can still be noted 469 days after inoculation of dead bacilli. This certainly cannot be considered transient sensitization.

Confirmation of these findings without further qualification would upset current beliefs; it would tend to return our tuberculosis immunology to its original chaotic state by nullifying the classification of infection hypersensitiveness as a phenomenon sharply distinct from other forms of allergy. On the other hand, it may be shown that some factor has been overlooked, and that, in one or more important features, the reaction, as well as the state of resistance to tuberculosis, in the infected animal and the one sensitized by inoculation of dead bacilli vary. Attempts have been made for many years to produce immunity to tuberculosis by the injection of dead tubercle bacilli, whole or modified in various ways. The earliest investigators had the example of Pasteur and his successful work

1. Zinsser, Hans: J. Exper. Med. **34**: 495 (Nov.) 1921.
2. Zinsser, Hans; and Petroff, S. A.: J. Immunol. **9**: 85 (March) 1924. Petroff, S. A.: Am. Rev. Tuberc. **7**: 412 (Aug.) 1923.
3. Petroff, S. A.: Paper read before the twentieth annual meeting of the National Tuberculosis Association, May, 1924.

on vaccination with dead and attenuated cultures of other bacteria to inspire them. These attempts have thus far been unsuccessful. If the recent reports of Zinsser and his colleagues are accepted, current concepts on the relation between tuberculin hypersensitiveness and resistance to infection must be revised. New starting points may be found for attempts at the artificial production of resistance. In some respects, a dead tubercle bacillus is a more encouraging object for research than a live one. A live tubercle bacillus is by definition immune to chemical analysis, but a dead bacillus is a chemical mixture, susceptible of fractionation, limited only by the chemist's analytic capacity. Modern methods have not been applied in this analysis as they might be. The common conception of sensitization and immunity in tuberculosis as the result only of true infection has diverted immunologists from interest in the chemistry of the dead bacillus. Findings such as those of Zinsser and Petroff can hardly fail to turn their interest again to the constitution of the bacillus itself.

VITAMIN CONFUSION

Only a few years have elapsed since the existence of vitamins was first brought prominently to attention. The claims for the existence of such accessory food factors were received with skepticism for some time, for it seemed unlikely that substances playing a prominent part in nutrition could have escaped recognition so long. Most of the earlier observations and deductions have now been tested repeatedly and found to be correct. Within less than a decade after Funk coined the word vitamin, he [1] felt justified in stating that the subject of vitamins, already beyond the stage of hypothesis, is based on a firm foundation and has received universal recognition. In spite of this, we are well aware, he adds, that great gaps exist in our knowledge, so that we cannot regard the chapter as closed. The skepticism in regard to the existence of such special and unique dietary essentials—substances characterized by a disproportion between the apparent large importance of their functions and the small amounts in which they are ordinarily consumed—has in part arisen from the failure heretofore to isolate and identify the vitamins as chemical entities. Hence, a student of the problem has remarked, in answer to the skeptic, that, to be logical, the latter should avert his eyes from such agents as toxins and antitoxins, not to speak of enzymes, powerful realities all of them, which, though of unknown constitution, by no means elude objective and quantitative study.

Study of the vitamins had not proceeded very far before it became apparent that more than one of these newly recognized factors may be concerned in securing the normal functioning of the organism. In estimating the nutritive requirement of the organism, it presently became necessary to take into account not only the four food categories, protein, carbohydrate, fat and inorganic material, that had long been regarded as fundamental, but also a diversity of the less clearly defined dietary components. Thus, it is clearly appreciated today that, in order to avert scurvy, beriberi, rickets and xerophthalmia, for example, it is necessary to supply four demonstrably distinct food factors or vitamins; nor is the possibility of specific requirements exhausted with this list. Lately, experiments have been recorded that furnish strong presumptive evidence that the success of the reproductive functions may depend, in part at least, on the presence of as yet undefined chemical substances, as, indeed, the proper activity of the thyroid is bound up with a small supply of the element iodin.

As might be anticipated, progress in the study of the rôle of such vitamins soon encountered the problem of nomenclature. At first, investigators were content to describe the products used in terms of their solubilities, as the water-soluble or the fat-soluble vitamin. Such a classification quickly found its limitation with the increasing number of possibilities. McCollum and his collaborators attempted to find a way out of the growing perplexities and state of confusion by employing provisional algebraic terms, using a prefix designating characteristic solubility. Thus arose the terms fat-soluble A and water-soluble B, to which Drummond added the suggestion of water-soluble C to designate the antiscorbutic properties of foods.

Obviously, if the chemical identity of the vitamins should be discovered, the questions of nomenclature could be answered on the basis of chemical structure. Meanwhile, inexcusable confusion has been added to an already tangled situation, not only through the designation of different properties by the same alphabetical symbol, but also by the application of different letters to the same vitamin potency. For this unfortunate situation, some of the investigators are themselves directly or indirectly responsible. The most recent instance, which has had much erroneous or misleading exploitation in the lay press, involves the alleged isolation of "bios," the material that Wildier, Amand and Devloo of Louvain, Belgium, prepared from yeast and found to be essential for the rapid proliferation of yeast cells. To a comparable product Funk had earlier given the designation vitamin D, an unfortunate selection because there is little or no convincing evidence that the "bios" component of yeast plays any indispensable part in the function of animals, and because, with this exception, the vitamin series had until then been applied primarily to animal nutrition. In describing an exhibition of the unidentified "bios," the reporters [2] remark that "it created a sensation since it was the first vitamin that any one had ever seen or handled"; and they proceed to imply that this "reduced pyridin ring" is essential to animal existence.

1. Funk, Casimir: The Vitamines, Baltimore, Williams and Wilkins Company, 1922.

2. The Isolation of Bios, Science, May 16, 1924, Supplement, p. x.

Nor does the confusion end here. The expression vitamin D has been applied by one investigator to designate the antirachitic property of cod liver oil, in distinction to its content of antiophthalmic and growth-promoting vitamin A. Another prominent writer prefers to refer to the antirachitic vitamin with the suffix X, whereas Evans has employed the latter to designate the factor influencing fertility. To avoid this incongruity, it has since been proposed that the latter be termed vitamin E.

Commenting on the equally confusing array of names that was being introduced into the new discipline of immunology a few years ago, a thoughtful critic remarked that science was in danger of becoming a mere play of words. To those who may regard the story of the vitamins as a mere juggling of alphabets, the apologies should be supplemented with a reminder that, despite the momentary contradictions, there are real discoveries of large significance intermingled in the confusion of terms. What's in a name? The practical value of the knowledge already gained is sufficient to redeem the subject from the ignominy of its unfortunate literary beginnings. Fruits and vegetables, cream and cod liver oil have acquired new meanings since the advent of the vitamin theory. And now the time has arrived for progress in the direction of precision. To permit this, Funk has remarked, it would be very desirable that at least some of the workers should abandon the beaten path of exclusive animal experiments and break a fresh trail leading toward the chemistry, physiology and pharmacology of the vitamins, as well as the anatomic pathology of the avitaminoses.

Current Comment

PERIODIC MEDICAL EXAMINATIONS

Health examination, health guidance, longevity service or personal preventive medicine is, as it should be, receiving more and more attention by the medical profession through the state and county medical societies. Maine has pioneered in state-wide work; Pennsylvania has announced the subject as a prominent part of the program for its annual meeting in the fall, when personal examination of a hundred physicians attending the meeting will be made as a demonstration. In a number of instances county societies have been active, and Kings County, Brooklyn, has just finished its experimental and demonstration period. Ninety-one members of the society received a personal health examination as a part of the county graduate educational program. A thorough study of the findings has been made, and an interesting and instructive report submitted to the Public Health Committee of the society.[1] Almost every deviation from normal to be expected in a group presumably healthy was encountered, although comparison with other series of examinations by the United States Public Health Service, and by insurance companies indicates that the physicians rate better in "health" than other corresponding age groups. Whether this is due to the infrequency of bad mouth conditions and constipation in the list of "defects" found is a natural question. Contrary to the usual experience, hypotension was frequent. Physicians, knowing blood pressure apparatus and technic, are not nervous. If pressure is susceptible to variation, it behooves the health examiner to weigh cause and effect in order to avoid wrong deductions, which might result in useless if not actually harmful advice. One physician was able to raise his pressure 30 degrees by smoking a cigaret. That physicians, despite irregular hours of work, deviation from routine as to meals and sleep, and less systematic exercise and recreation than is usually considered advisable, rate so high in health would seem to indicate that subconsciously, at least, physicians practice what they preach. In summarizing, the report points out that the physicians in Brooklyn are in better general condition than other groups of men in the community, although, on the basis of the sample examined, one third might well practice "girth control." The significance of such findings as hypotension or poor muscle tone needs scientific investigation. Methods of sizing up psychologic soundness need to be developed. The medical service required in making health examinations requires not only time but also discriminating judgment to interpret rightly the significance of various minor findings in relation to habits of living.

1. Richardson, Anna M.: A Report on the Physical Examination of Ninety-One Members of the Medical Society of the County of Kings.

CRIMINALS AND DEFECTIVES

The United States Public Health Service has just made available figures issued by the Department of Commerce concerning the number of persons confined in federal, state, city, county and private institutions for defectives, dependents, criminals and juvenile delinquents, in hospitals for mental diseases, institutions for feebleminded and epileptics, homes for adults and dependent or neglected children, institutions for juvenile delinquents, penal institutions and almshouses, Jan. 1, 1923. At that time, out of a total population in the United States of approximately 110,000,000 persons, there were in such institutions, dependent on the community for their support, 893,679 persons, or approximately one person in every hundred. In addition, 4,973,032 patients were treated in hospitals during the year. June 30, 1923, there were 29,343 inmates in institutions for juvenile delinquents. The report gives no corresponding figures for former periods, and the trend of dependency upward or downward cannot be determined. Nevertheless, the fact that so large a part of the population does not meet the demands of society gives rise to the question whether the strain of modern civilization is passing the limit of human endurance or whether the human organism has deteriorated. The extent of juvenile delinquency, of which 29,343 inmates in institutions constitute merely an index, suggests the need for beginning the task of reconstruction in the plastic period for childhood. It suggests also the advisability, as suggested by Dr. W. A.

Pusey in his presidential address to the American Medical Association, of paying more attention to the character of the stock from which future citizens are to come.

THE THERAPEUTIC STATUS OF CAMPHOR-IN-OIL

Ignorance, inertia and error are foremost among the factors that militate against effective therapy at a time when therapeutic nihilism has gained a strong hold on many thoughtful physicians. Almost equally detrimental is the misplaced confidence that tradition or propaganda often engenders for certain drugs. Unwarranted hopes for pharmacologic potency not only lead to failure where a patient expects success, but also delay the opportunity to try something likely to be more efficacious; and thus sometimes the most favorable moment has passed. These considerations are prompted by the recent report of Marvin and Soifer [1] regarding the use of camphor-in-oil as a cardiac stimulant. Although the drug has received slight recognition in academic pharmacology, and at best an unenthusiastic reference in Useful Drugs, it is still employed widely in circulatory emergencies. When competent clinicians study its action in such cardiac stress as congestive heart failure and fail to secure evidence of any action on heart rate, respiration, blood pressure, vital capacity, or the general clinical condition in which digitalis is frequently promptly effective, there is surely justification for comment. Henceforth the burden of proof that camphor-in-oil has a rational place in the treatment of congestive heart failure rests with its advocates. All others may well hesitate to put their trust in a drug that seems to have given more promises than therapeutic performances.

THE VALUE OF ACCURATE DIAGNOSIS

"A sharp, critical analysis of disease conditions and their prompt detection are two of the prominent features of modern medicine, and largely contribute to its right to be called scientific." In considering these words of a keen student of medical progress, the practitioner is likely to call to mind mistakes as well as successes of diagnosis, and properly so; for careful self-examination and review in such matters are the impelling motives to progressive improvement. The recent literature of medicine abounds in frankly recorded instances of medical errors as well as discouraging prognoses. It is advisable sometimes to temper the spirit of humiliation with some of the encouragement that comes from success. An instructive instance of the worth while character of discriminating diagnosis has been furnished by Crowell [2] in a case of nephrolithiasis. Frequently the determination of the presence of a stone in the urinary tract is all that the clinician asks as a guide to his procedure for relief. Quite properly, he puts little if any reliance on the prospect of dispelling urinary calculi by a specific solvent. Nevertheless, it is important to remember that such concretions may be decidedly unlike in chemical composition. In Crowell's patient, the detection of cystin in the urine was the indication for a successful attempt to free the kidney from calculi by keeping the urine alkaline; for, in contrast to phosphates, cystin is soluble in alkalis. The disintegration of a stone associated with cystinuria by internal administration of alkalis, pelvic lavage with alkaline solutions (which may include even alkaline antiseptics such as mercurochrome-220 soluble) and proper limitations of protein in the diet is a good achievement. Cystinuria is an anomaly of metabolism that persists throughout life. Calculi are therefore likely to be formed at any time. Surgery, the usual mode of relief, is unsatisfactory in principle because of the frequency with which stones recur. Discriminating diagnosis offers a clue to the use of less drastic procedures.

1. Marvin, H. M., and Soifer, J. D.: The Value of Camphor-in-Oil as a Cardiac Stimulant, J. A. M. A. **83**: 94 (July 12) 1924.
2. Crowell, A. J.: Cystin Nephrolithiasis; Report of a Case with Radiographic Demonstration of Disintegration of Stone by Alkalization, J. Urol. **11**: 545 (June) 1924.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Typhoid in Little Rock.—Eighteen cases of typhoid fever were reported in Little Rock within a period of ten days early in July. The city water supply was excluded as a cause of the outbreak, but a dairy was ordered closed pending further investigation. About half the victims were accustomed to using milk from this dairy, it is reported.

Railway Hospital.—Dr. Wells F. Smith, formerly of Springfield, Mo., will be in charge of the $750,000 Missouri Pacific Railway Hospital which is being erected at Little Rock. Dr. Paul F. Vasterling, St. Louis, will be the chief surgeon. The hospital will be owned, it is reported, by the Missouri Pacific Hospital Association, an organization comprising practically all the railway employees, each of whom will contribute to the upkeep of the hospital.

CALIFORNIA

Hospital News.—A three story addition to the new French Hospital, Los Angeles, will be erected at a cost of $90,000. ——The Reid Sanitarium, Tuolumne, of which Dr. Eugene H. Reid is the owner, was recently badly damaged by fire.

Metabolic Clinic at San Diego.—Dr. James W. Sherrill, formerly associated with Dr. Frederick M. Allen at the Rockefeller Institute of Medical Research, New York, and the Physiatric Clinic, Morristown, N. J., has been appointed medical director of the new metabolic clinic, now nearly completed at San Diego. Dr. Sherrill will go to San Diego about August 15 to supervise the furnishing and equipping of the clinic. There will be a hospital of fifteen beds, laboratories and a staff of trained assistants. Owing to the generosity of Miss Ellen Scripps, the new institution will be opened to the public in less than ninety days.

COLORADO

Druggist Sentenced for Selling Narcotics.—James F. Sirois, Pine Grove, a druggist, has been convicted in the federal court at Denver of violating the Harrison Narcotic Law. He was sentenced to four and a half years in the Leavenworth penitentiary and fined $1,000.

University News.—The University of Colorado School of Medicine, Denver, will be transferred to the new set of buildings, which comprise the medical school proper, state general hospital, psychopathic hospital and nurses' home, at the opening of the school year, September 29.——A gift of $120,000 for the construction and equipment of the outpatient building was recently received from Mrs. Verner Z. Reed.

GEORGIA

Physician Arrested.—Dr. Charles Silverman, Savannah, was recently arrested charged with violation of the Harrison Narcotic Law, it is reported. Dr. Silverman, although he had not registered with the Internal Revenue Department nor paid the tax for the prescription of narcotics this year, is said to have sold morphin to a representative of the Internal Revenue Department.

Society News.—At the July meeting of the Chattahoochee Valley Medical Society the Fourth District Medical Society was reorganized and the following officers were elected: president, Dr. Mercer Blanchard, Columbus; vice president, Dr. Wallace H. Clark, La Grange, and secretary, Dr. Francis Burton Blackmar, Columbus. The society will meet next in LaGrange, August 14.

University News.—Roentgen-ray equipment to the extent of $6,000 was recently installed in the Emory University division of the Grady Municipal Hospital, Atlanta.——During the last school year the School of Medicine of Emory University received gifts totaling $51,500, which were applied to operating expenses.——The Wesley Memorial Hospital, Atlanta, became an integral part of Emory University, December, 1923.

Water Supply for Girls' School.—A bill has been introduced in the state legislature to provide the sum of $25,000 for a new water supply for the Georgia Training School for Girls, located near Atlanta. Water at present is obtained from springs that are not only inadequate but, it is reported, are also polluted. The state board of health has recommended that the springs be abandoned, and that mains be laid to connect the school with the water supply of Atlanta.

Supreme Court Upholds Board of Medical Examiners.—The supreme court of Georgia affirmed, July 19, it is reported, the decision of Judge Bell of the Fulton superior court in denying Drs. N. A. Hughes and T. W. Hughes, Atlanta, an injunction, and held that the state board of medical examiners has the right to try these physicians on the charge of using improper advertising matter. The record indicates, it is said, that the Drs. Hughes were formerly convicted in Texas, March 29, 1915, on charges of circulating improper advertising matter in the mails, Dr. T. W. Hughes being sentenced to serve eighteen months in the Leavenworth penitentiary, and Dr. N. A. Hughes to a three-year term. The defendants claim that the record of the Texas court should not have been admitted in the present case, since each had been pardoned, the former March 12, 1917, the latter June 22, 1918.

ILLINOIS

Personal.—Dr. Louis C. Taylor, Springfield, has been reelected president of the Sangamon County Tuberculosis Sanitarium Board.

Physicians and Lawyers Picnic.—The first joint picnic of the Henry County Medical Society and the Henry County Bar Association was held at the Midland Country Club, Kewanee, July 10.

Practitioner Arrested.—S. A. Dial of Centralia was arraigned before Judge Wilson in the county court, July 14, charged with practicing medicine without a license. He pleaded guilty and was held in bonds of $1,000.

Another Chiropractor Treats Diphtheria.—L. W. Yost, a chiropractor of Port Byron, has been arrested following the death from diphtheria of a lad by the name of Dale Dillin, Hinsdale, it is reported. Yost was charged with practicing medicine without a license and was released on $500 bonds. It is said he treated this patient for several days by chiropractic methods before a physician was called. The chiropractor was also quarantined by the state health department.

Tuberculosis Hospital.—The St. Clair County Tuberculosis Society has started a movement to establish a county tuberculosis hospital. Dr. C. S. Skaggs, Belleville, is a member of the committee in charge of preliminary arrangements, the first step being a presentation of this question to the people at an election for a bond issue.——The Will County supervisors have approved plans for a county tuberculosis hospital that will cost $125,000. Dr. Philip D. McGinnis, Joliet, is a member of the sanatorium board.

Baby Conferences.—Applications involving more than 200 children have already been made from more than fifteen counties for the annual State Fair Better Babies Conference which will be conducted by the state department of health at Springfield, September 13-20. There will be more than fifty awards.——Twenty-five well-baby conferences were conducted by the state department of health during the first half of this year; 1,318 babies were examined. Only fourteen of these babies had been vaccinated against smallpox.

INDIANA

Personal.—Dr. Christopher M. Reyher has been appointed health officer of Gary to succeed Dr. William J. White.

Hospital News.—It has been officially announced that the first unit of the James Whitcomb Riley Memorial Hospital for Children, Indianapolis, erected at a cost of $1,250,000, will be dedicated, October 7.

Tuberculosis Hospital Appropriation.—The Vanderburg County Council voted $150,000 in bonds for the improvement of Boehne Tuberculosis Sanitarium, a few miles west of Evansville. This camp was maintained by private donations, until Vanderburg County took it over last summer.

IOWA

License Revoked.—At a meeting of the state board of health, early in July, the license to practice medicine of Dr. Clarence H. Hanson, Eagle Grove, was revoked, it is reported. Dr. Hanson was found guilty about a year ago of violation of the Harrison Narcotic Law and was sentenced to serve one year and a day in the Leavenworth penitentiary.

KANSAS

Hospital News.—A tax levy has been ordered and a site provided for the erection of a $50,000 hospital building at Clay Center.

Personal.—Dr. Mervin T. Sudler, Kansas City, has resigned as dean of the University of Kansas School of Medicine, Rosedale. His successor has not yet been appointed.

KENTUCKY

Old Medical Society Revived.—The Central Kentucky Medical Society comprising the counties of Boyle, Mercer, Lincoln and Garrard has resumed activity after a lapse of seven years. Organized in 1867, this society held quarterly meetings regularly until 1917 when practically its entire membership entered the U. S. Army to engage in the World War. The last set of old officers was reelected at the reorganization meeting in Danville as follows: president, Dr. Virgil G. Kinnaird, Lancaster; vice president, Dr. Greene L. Johnson, Harrodsburg; secretary, Dr. John T. Price, Harrodsburg.

LOUISIANA

Personal.—The honorary degree of LL.D. was conferred on Dr. James T. Nix at the commencement exercises of Loyola University, New Orleans, recently.——Dr. Sambola J. Couvillon has assumed his duties as mayor of Moreauville.——Dr. William J. Sandidge, Shreveport, has been reelected parish health officer of Caddo Parish.

Physical Examination Before Marriage.—The Ducros bill recently signed by the governor requires that the male applicant for a marriage license must be examined by a licensed physician not more than fifteen days before the license to marry is applied for. It is stipulated also that a physician cannot charge more than $2 for making the examination. Should a clerk of court issue a marriage license without a certificate, he may be fined or imprisoned or both.

Quarantine for Fruit Boats.—A new system of quarantine inspection has been decided on for fruit boats bound to New Orleans from Central America which are known to be free from quarantinable diseases. It will eliminate delays at the mouth of the river, which now occur when these boats arrive after midnight, and permit them to proceed to the lower limits of the city where they will be held only long enough for the inspection of passengers. A new quarantine station will be established there. This will prevent loss from delay and from the deterioration of fruit in hot weather which banana importers have complained of for many years. It will also put New Orleans on a par with New York and other Northern ports in the rapid handling of fruit.

MARYLAND

Hospital News.—Ground will soon be broken for the erection of a new hospital and administration building for the Eudowood Sanatorium at Towson. The building which will be completed in about six months will be a three-story structure with twelve private rooms besides operating rooms and offices and will cost about $100,000.

Milk at Its Best.—According to reports from the city health department, Baltimore has now the best milk in its history. Great improvement has been shown in recent weeks by dairies, a number of which have added chemists to their organizations and are cooperating with the health authorities. Twenty-five dairies in Maryland and Pennsylvania have been barred from the Baltimore market, because their product was not up to standard.

Personal.—Dr. M. V. MacMillan has been appointed community manager of the U. S. Veterans' Bureau Rehabilitation Center No. 2, Perry Point, Md. Dr. MacMillan was director of field hospitals in France with the forty-second division.——Dr. Robert H. Riley, the State Department of Health, and Dr. J. H. Mason Knox, chief of the bureau of child hygiene, are making a tour of inspection of the clinics established in the counties of Western Maryland.——Dr. Arthur P. Herring, commissioner of mental hygiene of Maryland is making a tour of inspection of all county homes.

MASSACHUSETTS

Personal.—Dr. William E. Chenery, for ten years chief of the nose, throat and surgical department of the Forsyth Dental Infirmary for Children, Boston, has resigned.——Dr. Francis G. Benedict, director of the Nutrition Laboratory of the Carnegie Institution, Boston, received the honorary degree of doctor of science from the University of Maine, where he gave the commencement address, recently.

MICHIGAN

Society News.—At the annual meeting of the Wayne County Medical Society, May 19, at Detroit, the following officers were elected: president, Dr. William J. Stapleton, Jr.; vice president, Dr. Herman H. Sanderson, and secretary, Dr. Richard M. McKean.

Board of Health Requests Arrest of Drug Clerk.—A warrant was issued on request of the Detroit Board of Health for the arrest of Edward Coles, a drug clerk, whose mistake in filling a physician's prescription is said to have been responsible for the death of Charles Newsome. The board of health authorities allege that Coles is not a registered pharmacist.

Chiropractors Now Want Osteopath Arrested.—In retaliation against osteopaths who caused the arrest of nine or more chiropractors for practicing medicine without a license (THE JOURNAL, July 26, p. 277), the chiropractors have requested the arrest of C. P. Burns, St. Joseph, one of the osteopaths who signed complaints against the chiropractors. It is reported that the chiropractors charge that Burns is not properly licensed to practice medicine.

MINNESOTA

Personal.—The University of Pittsburgh conferred the degree of LL.D. on Dr. William J. Mayo, Rochester, who gave the address at the recent commencement of that university.

Tuberculosis Ward for Winona.—The bequest made by Dr. H. F. McGaughey of Winona to establish a tuberculosis hospital in that city has passed to the Winona Hospital for the establishment of a tuberculosis ward. It amounts now to about $34,000.

MISSOURI

Dr. Vinyard Honored.—Dr. George W. Vinyard, Jackson, entered the fiftieth year of his practice, recently, which occasion was made notable by the Southeast Missouri Medical Association electing him president for the second time, an honor heretofore not conferred on any member of that association.

Osteopath's License Revoked.—The license to practice medicine issued to Samuel L. Bailey, Carthage, an osteopath, was revoked by the state board of health, April 19, on charges, which were sustained, of securing his admission to examination by false statements about his attendance at medical schools.

Application to Open Sanatorium Denied.—An application by Dr. Joseph C. Vorbeck, St. Louis, medical director of the Radium Products Company, to open a sanatorium was denied by the board of public service. Health Commissioner Starkloff found that the officers of the sanatorium were all stockholders in the R. D. Burchards Chemical Company. The president of the chemical company had previously applied for a permit to open the sanatorium but this was denied because there was no physician on the staff as required by ordinance.

Plans for Removal of Medical School.—Tentative plans for the removal of the University of Missouri School of Medicine from Columbia to Kansas City are being prepared for presentation to the board of curators. The school now gives instruction covering only the first two years in medicine. There is persistent agitation, the dean stated, to establish the last two years. The change of location is being thoroughly investigated to determine if it is practical, and to develop facts to lay before the curators. At a conference in Kansas City, in July, the mayor, the president of the Jackson County Medical Society, the city councillor, members of the hospital and the board of health, and the dean of the school of medicine attending, it was proposed to follow somewhat the plans of affiliation between the Cincinnati General Hospital and the University of Cincinnati School of Medicine. Should the curators accept this offer, the hospital would continue to be a municipal hospital, and the university would have no part in its maintenance.

NEW YORK

Hospital News.—The new buildings at the J. N. Adam Memorial Hospital are practically completed. They will increase the capacity of the hospital from 320 to more than 600, and afford a better opportunity for heliotherapy and artificial light treatment which, the state department of health says, have been used more successfully in tuberculosis at this hospital than elsewhere in America.

Personal.—For the first time the Mary Immaculate Hospital, Jamaica, has a woman ambulance surgeon, Dr. Amalia J. Simonetti of Brooklyn, a graduate of the Woman's Medical College of Pennsylvania, Philadelphia.——Dr. S. P. Chen, medical director, government isolation hospital, Peking, China, was a guest at the annual conference of health officers and public health nurses at Saratoga Springs, June 24-26.

Albany Releases College from Old Bond.—The city of Albany has released the Albany Medical College from a $10,000 bond given in 1877 as a covenant that the college property on Eagle Street would be used only for college purposes, it is reported. This is the first step toward a new medical college building, which will be erected on New Scotland Avenue next Spring, directly west of the new addition to the Albany Hospital. The Eagle Street property can now be sold and the medical school moved to the new site.

Safety Museum.—The American Museum of Safety is cooperating with the New York Department of Labor in maintaining a safety museum in the Labor Department Building at 120 East Twenty-Eighth Street. The exhibits are frequently changed, and special attention is paid to the reception of groups of persons interested in welfare work or those engaged in industrial pursuits. It is especially recommended that the foremen of industrial plants be advised to visit this museum. The Division of Industrial Hygiene maintains two lecturers in the field who are ready to give illustrated talks on industrial hygiene and accident prevention when requested by manufacturing plants.

New York City

Sydenham Post-Graduate Hospital.—Plans for erecting the new Sydenham Post-Graduate Hospital on the west side of Manhattan, between One Hundred and Twenty-Third Street and Hancock Place, have been completed and the contract awarded. It is estimated that the building and equipment will cost $1,250,000. The supreme court has granted permission to the trustees to increase their present second mortgage on the property from $180,000 to $250,000, which will be secured by the bond issue on the property. More than $400,000 of the fund required has been collected.

Physical Examinations in the Borough of Queens.—In connection with the movement to popularize periodic physical examinations, the Queensboro Tuberculosis Association announces that practicing physicians in the borough of Queens desiring literature and reprints on periodic medical examinations and blanks can obtain them by writing to Henry C. Wright, president of the Queensboro Tuberculosis Association, 16103 Jamaica Avenue, Jamaica, N. Y. Physicians having patients in industry, who desire to be examined, may refer them to the Occupational Clinics of the department of health, which will cooperate in making these examinations.

Illegal Practitioners.—Raoul J. Pareant, 505 West One Hundred and Thirty-Fourth Street, is said to have treated a woman for dog bite, and sent her a bill for $100. It is

reported that he was arrested and held for trial in $500 bail, but he jumped his bail.——B. C. Friederich of Brooklyn is said to have treated a woman for gallstones, and charged her about $500. He, too, is reported to have been arrested and held for trial in $500 bail; he forfeited his bail.——Adele Fluth, a naturopath, 2010 Seventh Avenue, is said to have been arrested and found guilty of violating the Medical Practice Act. Sentence was suspended.

The Typhoid Fever Outbreak.—The records of the New York City Health Department show that up to July 25 there had been traced to the infected brook in Englewood, N. J., eighty-three cases of typhoid fever, four of which cases terminated fatally. Further efforts to locate the source from which the brook became polluted disclosed a blocked up sewer which overflowed into the brook. Orders have been issued to clear the obstruction and correct faulty construction of the sewer and storm water drains in the vicinity. The officials of the New Jersey Health Department have assured the New York City health authorities that they will take steps to remove any possible causes of typhoid infection at the Palisade Interstate Park. Bathing in the Hudson River opposite Dyckman Street has been stopped indefinitely.

NORTH CAROLINA

Quack Arrested.—"Sanie" Sharp, recently arrested for practicing medicine without a license, has been sent back to the Virginia State Hospital for the Insane, from which institution he was on leave of absence. He collected $10 and a pistol for having "cured a woman of cancer," it is reported. When "Sanie" was arrested he had in his pocket a rabbit's foot, a sack of herbs and various other charms.

OHIO

Right to Practice Suspended for Thirty Days.—It is reported that Dr. Dwight I. Roush, Springfield, has been barred from the right to practice medicine for a period of thirty days by the state board of medical examiners. Dr. Roush is, it is said, an exponent of the Abrams electronic reactions, and was charged with publishing false and misleading statements concerning the cure of incurable diseases.

Survey of Tornado Casualties.—A survey of casualties caused by the recent tornado in the counties of Lorain, Erie, Sandusky, Cuyahoga, Medina, Ottawa, Portage and Ashtabula, showed that eighty-four persons were killed, 442 were injured so that they required hospital treatment, and 400 others were less seriously injured. The American Red Cross had 194 nurses on duty in hospitals during the height of relief work, and it built eight special dispensaries.

Chiropractors Arrested.—Warrants were issued, July 19, for twelve chiropractors of Akron on charges of practicing without a license. Nine were released on bonds of $200 each pending arraignment. The warrants were requested by Frank A. Dorsey, state medical inspector.——Paul and Theresa Lerner, chiropractors, of Lima, found guilty more than a year ago of practicing medicine without a license and fined $25 and costs, must now pay their fines or go to jail, according to a decision of Judge Becker, July 19, in upholding an error case brought up from the court of the justice of the peace.

OKLAHOMA

Personal.—The State Health Commissioner has announced that Dr. David T. Bowden, Jr., has been appointed to direct the cooperative efforts of the state and the International Health Board in Oklahoma. Dr. Bowden will supervise the work of full-time county health units that are being established.

PENNSYLVANIA

Personal.—Dr. M. M. Mackall has been elected president of the board of health of Beaver to fill the vacancy made by the death of Dr. U. S. Strous.——Dr. William G. Turnbull, deputy secretary of health, has accepted a position as head of the Palmer Memorial Hospital, which will be erected on the Hudson River, near Kingston, N. Y. Dr. Turnbull's resignation will not be effective until the end of the year.

Philadelphia

Occupational Clinics to Be Opened.—The success of the recently established occupational clinic at the Philadelphia General Hospital has led the department of health to decide to open similar clinics in various sections of the city. The clinic at the hospital was started in accordance with the state law requiring persons working in public places to obtain health certificates.

Investigation of Ripe Olives.—Following the receipt of a report from the U. S. Department of Agriculture, that there are ripe olives on the market subject to botulism, the city health department and government agents are conducting a city-wide inspection of wholesale houses and stores to determine if there is danger. A warning has been sent out by the health department giving some ways of detecting which olives are dangerous.

The Sanitary League.—To cooperate with the department of public health and provide an extension of the inspection service of that department, the Philadelphia Child Health Society has organized the Sanitary League. The purpose of this organization is to remove the dangers of fly-borne disease. The league has divided the city into six districts each in charge of two or more public spirited citizens, who appoint committees in each ward to supply information about sanitation and to impress residents of the need of fly prevention. The headquarters of the Sanitary League are in the office of the Philadelphia Child Health Society, 1506 Locust Street.

VIRGINIA

Personal.—Dr. Bathurst B. Bagby, health officer of Henrico County, has been appointed acting health officer of Richmond until September 1.——Dr. John Fulmer Bright, mayor-elect of Richmond, has appointed Dr. Walter Brownley Foster as director of public welfare and chief health officer of that city, thus combining the offices held by Drs. Ernest C. Levy and C. Curtis Hudson. Dr. Foster, who has been health officer of Roanoke for the last fourteen years, is a native of Richmond. The appointment becomes effective October 1.

New State Board of Health.—The new state board of health, composed of seven instead of fourteen members, has been appointed by the governor as follows: Drs. Henry M. Miles, Norton, two years; W. M. Smith, Berryville, three years; Guy R. Harrison, D.D.S., Richmond, four years; William T. Graham, Richmond, five years; George B. Lawson, Roanoke, six years; Lawrence T. Royster, University of Virginia, Department of Medicine, Charlottesville, seven years; John T. Daniels, Cape Charles, one year. Dr. Miles is the only new member, the others having served on the old board. The reduction in size of the board was one of many reforms recommended by the commission on simplification and economy, and one of a few adopted by the general assembly.

WASHINGTON

Hospital News.—A new wing to St. Luke's Hospital, Spokane, erected at a cost of $275,000, was opened June 19. It is four stories high and has accommodation for 149 patients.

WISCONSIN

Personal.—Dr. Alfred G. Kreutzer of the Marquette University School of Medicine, Milwaukee, has been granted ten months' leave of absence to study abroad.

State Medical Society.—In addition to an unusually interesting scientific program at the seventy-eighth annual meeting of the State Medical Society of Wisconsin, Green Bay, August 20-22, there will be the annual banquet-dance Thursday evening, August 21, and a general smoker Wednesday evening, August 20. Other entertainment features have been arranged, including golf and swimming. The first meeting of the house of delegates will be Tuesday evening, August 19. Thirty-two booths have been reserved for the commercial-scientific exhibit.

PHILIPPINES

Asylum for Children of Lepers.—An addition has been erected at the government orphan asylum at Manila as a home for 200 children born at the Culion leprosarium who are to be brought there as soon as the building is finished.

Leprosy in the Philippines.—The *Revista Filipina de Medicina* relates that it has been decided to organize stations for treatment of leprosy at accessible points throughout the islands and reserve the island of Culion for a leprosarium to which only the severe cases will be sent.

Campaign Against Malaria in the Philippines.—The Rockefeller Foundation and the public health authorities of the Philippines are planning an intensive campaign against malaria to embrace the entire archipelago, sharing the expense. The work is to begin at Florida Blanca.

CANADA

Medical Missionary Granted Honorary Degree.—The University of Toronto conferred the degree of M.D., honoris causa, on Oliver R. Avison of Seoul, Korea, president of the Severance Union Medical College, June 6.

New Hospital Opened.—The new unit of the Provincial Mental Hospital, Essondale, B. C., erected at a cost of $1,000,000, was recently opened. Dr. Harold C. Steeves is superintendent of the institution, which has a capacity for 250 patients.

Association News.—At the forthcoming convention of the British Association for the Advancement of Science at Toronto, Ont., commencing August 6 (The Journal, May 17, p. 1619; June 7, p. 1873; July 19, p. 203), the manufacture and use of insulin will be a topic of discussion under the direction of Prof. J. J. Macleod and Mr. C. H. Best, both of Toronto, Ont.

University News.—A considerable portion of the exhibit of the University of Toronto at the Canadian National Exhibition which takes place in Toronto, Ont., the latter part of next month, will be devoted to a demonstration of the manufacture of insulin under the direction of Mr. Charles H. Best, one of its discoverers.

Agreement of Medical Associations.—At the recent visit to Canada of official delegates from the British Medical Association, an agreement was reached whereby members of the British association visiting in Canada shall have the full rights of membership in the local and provincial Canadian associations, and members of the Canadian organizations in good standing shall have the same privileges in the British association when in England. The affiliation between the Canadian Medical Association and the British Medical Association is now an accomplished fact according to a despatch from London, stating that the necessary resolution was unanimously carried at a recent meeting of the British Medical Association.

Hospital News.—The erection of an addition to the Oshawa General Hospital was considered at a special meeting of the governors, recently. It was decided to build an addition to provide for the mechanical, roentgen-ray and laboratory departments, which at present are scattered throughout the buildings. The addition will cost about $15,000.——The governors of the Kingston (Ont.) General Hospital have been advised that the late Charles S. Campbell, K. C. of Montreal, P. Q., bequeathed to the hospital $300,000 for the extension and maintenance of that institution. This is the largest gift ever received by the hospital.

Personal.—Dr. Edmund P. Lewis, Toronto, Ont., has recently been granted a Rockefeller Foundation traveling fellowship in psychiatry, arranged through the Canadian National Committee for Mental Hygiene. Dr. Lewis will travel throughout America and return to Canada to resume his work in mental hygiene.——Sir John William Thomson-Walker of London, England, is touring Canada with a number of fellow members of the British Medical Association, for the purpose of bringing into closer relationship the British and Canadian Medical Associations. Sir John met more than 1,800 Canadian physicians during his visit here.——Drs. C. D. Combiescu and C. Jonescu of the Bacteriological Institute, Bucharest, Roumania, recently arrived in Toronto, Ont., to study methods of preparing insulin, which under present conditions is available to only very wealthy patients in Roumania. The visitors are in America as guests of the Rockefeller Institute.——Dr. F. N. G. Starr, C.B.E., F.A.S.C., professor of clinical surgery in the University of Toronto (Ont.), has been elected a fellow of the Royal Geographical Society, London.

GENERAL

Red Cross Building at Walter Reed Hospital.—The executive committee of the American Red Cross has approved the erection of a permanent recreation building for the use of convalescent soldiers at the Walter Reed Hospital, Washington, D. C. The building will cost $150,000.

American Electrotherapeutic Association.—This association will hold its thirty-fourth annual meeting, September 9-12, at the Hotel Pennsylvania, New York. Further information may be obtained from the secretary, Dr. Richard Kovacs, 223 East Sixty-Eighth Street, New York, should be addressed.

Pacific Coast Oto-Ophthalmological Society.—At the twelfth annual meeting of this society, July 10-12, at Portland, Ore. (The Journal, June 28, p. 2127), the following officers were elected: president, Dr. Henry M. Cunningham, Vancouver, B. C.; vice presidents, Drs. Clarence Benson Wood, Los Angeles, and Hans Barkan, San Francisco; secretary-treasurer, Dr. Walter F. Hoffman, Seattle. The next meeting will be held at Vancouver.

Legal Aspects of Milk Control.—A list of 121 decisions of the highest courts of appeal of thirty-one states and the federal government, which deal with some phase of milk regulation, appears in *U. S. Public Health Reports*, July 18, 1924, in an article on "The Legal Aspects of Milk Control," by James A. Tobey, National Health Council, New York. This is said to be the most complete list on this subject, and there is appended a key to the legal references.

Convention of English-Speaking Ophthalmologic Societies.—There will be a convention of English-Speaking Ophthalmological Societies in London, July 14-17, 1925, under the auspices of the Ophthalmological Society of the United Kingdom and its affiliated societies. On the evening of July 13 the president and council of the Royal College of Surgeons will give a reception. The future of international ophthalmologic congresses will be discussed at a general meeting, July 16, on which date Sir John Parsons will deliver the Bowman Lecture. There will be visits to various institutions of ophthalmic interest, excursions to Oxford and Cambridge, a symposium by selected speakers on "The Evolution of Binocular Vision" and other addresses. The registration fee for those who are not members of the Ophthalmological Society of the United Kingdom will be £2.

The Virus of Foot-and-Mouth Disease.—Prof. Paul Frosch and Prof. H. Dahmen, who, according to the *Lancet*, June 28, have isolated the virus of foot-and-mouth disease, were invited by the Dutch government to demonstrate their discovery at Utrecht, June 16. They were able by ingenious methods of ultramicrophotography to photograph this filtrable virus after cultivating it on solid mediums. The virus proved to be, it is said, a short bacillus estimated at 0.1 micron in length, which they propose to name *Loeffleria nevermanni*. This work was reported at meetings of the Berliner Microbiologische Gesellschaft, April 7 and May 19; and at the request of the discoverers a committee of six was appointed to examine their claims. Professor Kleine of the Institute Robert Koch stated, May 19, that tests with the material that Frosch and Dahmen had supplied gave positive results.

National Museum of Engineering and Industry.—In cooperation with the Smithsonian Institution, the National Museum of Engineering and Industry is planning to erect on its grounds in Washington a building to house the original models of early inventions and the records of achievement of pioneers, inventors and engineers in the development of transportation and industry. One million dollars has been assured toward the establishment of the National Museum of Engineering and Industry, and a campaign to raise nine million dollars more has been started. The organization was recently incorporated by an "Organizing Committee of 100," composed of chairmen of boards of directors, presidents and chief engineers of industries and railroads, and professors of engineering and history in universities and colleges. The president of the new organization is Elihu Thomson, who recently received the Kelvin Gold Medal from the Royal Society at the Kelvin Centenary in London.

The Interstate Postgraduate Assembly and Clinic Tour.—Under the direction of the Tri-State District Medical Association, the Interstate Postgraduate Assembly and Clinic Tour extends an invitation to physicians in good standing to attend the assembly in Milwaukee, October 27-31. Many prominent speakers have accepted places on the program. The program committee includes Drs. Edward Starr Judd, Rochester, Minn.; Dean D. Lewis, Chicago; Ernest Sachs, St. Louis; John L. Yates, Milwaukee, and Walter L. Bierring, Des Moines, Iowa. This association is supervising an Interstate Postgraduate Clinic Tour to Canada, the British Isles and France, starting May 18, 1925. Leading teachers will conduct clinics and demonstrations in Toronto, Montreal, London, Liverpool, Leeds, Manchester, Newcastle, Edinburgh, Glasgow, Dublin, Belfast, Paris, Lyons and Strasbourg. There will be special tours to other leading centers and sight-seeing trips included in the regular tour. The cost of the tour, including first-class hotels, board, steamship, clinic arrangements and ordinary traveling expenses, will be under $1,000. Information may be obtained from the managing-director, Dr. William B. Peck, Freeport, Ill.

Acquainting People with Government Activities.—Realizing that government documents acquaint too few people with government business, the Secretary of the Interior, Dr. Hubert Work, has adopted motion pictures as an additional means to inform the public about that department. During the last year the use of motion pictures in the Department of the Interior has almost doubled. They are used now by the

Bureau of Mines, the Bureau of Education, Bureau of Indian Affairs, the national parks, and the Alaskan railroad. The Bureau of Mines alone has more than 300 sets of industrial films which have been shown 2,567 times to more than 693,000 persons, and in each of the forty-eight states and Alaska. The films used by the Department of the Interior not only acquaint citizens with the activities of their government, they educate and entertain, and actually promote government business. Some show the beauty of national parks, some what is being done for the Indians; they deal in fact with almost every subject. All of these films are distributed free. They can be secured by any organization that wishes to show them to an audience by paying only the transportation charge to and from Washington, D. C.

Conference on Standardization of Ingredients of Bacteriologic Mediums.—The Society of American Bacteriologists called a conference, which met, May 19, at the Hotel Astor, New York, to discuss steps to secure the standardization of raw materials of bacteriologic mediums. The following were represented:

American Chemical Society
American Public Health Association
American Water Works Association
Dairy Science Association
The Dairy Inspectors' Association
The Society of American Bacteriologists
The Research Laboratories of the New York City Board of Health
The Hygienic Laboratory, Washington, D. C.

The chief ingredients of culture mediums, peptone, sugars, agar and gelatin, were discussed, and the particular problems likely to be encountered in this work. It was pointed out that much investigation would have to precede such standardization and that the cooperation of the societies represented was necessary. It was also pointed out that with agar and gelatin the problems would be fairly simple, but that the standardization of sugars would be complex. It was the general opinion that so far as possible no new organization should be created, but that the present organizations should be used. The motion was unanimously adopted that a coordinating committee composed of the chairmen of the various committees which have to deal with bacteriologic mediums, be appointed, and that this coordinating committee put into operation a cooperative investigation looking toward the standardization of the ingredients of bacteriologic mediums.

LATIN AMERICA

School for Subnormal Children.—A school for subnormal children was recently opened in Argentina under the patronage of the faculty of medicine of Rosario.

Typhoid Epidemic.—It is reported that typhoid fever has been prevailing in epidemic form in Havana, Cuba, and that on July 12 the total number of cases had reached 375.

Santo Tomas Hospital.—The new building being completed for the Santo Tomas Hospital, Panama, which now forms part of the Gorgas Memorial Institute, will be officially opened September 1.

Campaign Against Alcoholism.—The minister of public instruction of Chile has placed at the disposal of the rector of the University of Chile the sum of 50,000 pesos to be expended for lectures, teaching material, and courses of instruction to show the evil effects of alcoholism. The director of primary education will receive 250,000 pesos for similar instruction.

Bonds for Sanitation in Uruguay.—The council of administration of Montevideo has been authorized to issue bonds for the improvement of sanitation in the department of Montevideo. The amount shall not exceed 5,000,000 pesos, bearing 6.5 per cent. annual interest, and amortizable in fifteen years. The council is also authorized to transfer bonds sufficient to repay 400,000 pesos advanced from the loan of 1922 to pay for sewers and other sanitary works.

Personal.—Dr. Francisco J. Duarte has been appointed representative for Venezuela at the second conference on opium to be held in Geneva, November, 1924.——A fund is being collected for a tribute to Dr. Moura Brazil of Rio de Janeiro on the occasion of his approaching fiftieth professional anniversary. Dr. Miguel Couto heads the committee in charge.——A banquet was tendered Dr. R. de Almeida Magalhães recently in congratulation for his nomination to be secretary of the national public health service.——Dr. C. Heuser of Buenos Aires has been elected honorary member of the German Roentgenology Society.——The Wilde prize of 1,000 pesos and a gold medal was awarded this year at the Buenos Aires Foundlings' Home to Dr. Jorge Dietsch for distinguished devotion in the care of children. He is assistant to Professor Jorge.——Dr. M. A. Iriarte of Bogota has left with his family for a trip to medical centers in other countries.——The *Repertorio de Medicina* reports that Dr. Martín Carvajal has accepted the position of state secretary for the Santander department, Colombia.

FOREIGN

Italian Congress on Eugenics.—The first Italian Congress on Eugenics meets at Milan, Sept. 20-23, 1924, in charge of Profs. E. Pestalozza, L. Mangiagalli, I. Boni and C. Gini. The two first mentioned are senators. Dr. E. Moretti, Via S. Paolo 10, Milan, is secretary of the Italian Hygiene Society and also of the congress.

Medical Equipment of Round-the-World Aeroplane.—The medical supplies carried by the British aeroplane en route around the world in charge of Squadron-Leader Maclaren consists of two aluminum cases which contain emergency bandages, dressings, surgical appliances and medicine in tablet form in featherweight containers representing 364 doses. The complete medical equipment weighs 24 ounces.

International Prize in Orthopedics.—The competition for the Umberto I prize closes Dec. 31, 1924. It is open to physicians of the world, and is to be awarded for the "best orthopedic work or invention." The prize is 3,500 liras. Application should be made to the president of the Rizzoli Institute, Bologna, Italy. The previous recipients of this five year prize have been Vulpius, Schulthess, Vangetti and Murk Jansen.

Seventy-Fifth Anniversary of the Netherlands Medical Association.—The recent annual meeting of this association was distinguished by the celebration of this anniversary and the publication of a history of the progress of medicine in the Netherlands as reflected in the work of the association. The meeting was held at The Hague, and Professor Burger, who presided, was decorated by the queen with the order of the Netherlands Lion. The main address, "Seventy-Five Years of Progress in Cardiovascular Disease," was by Professor Wenckebach, Vienna. He recalled that the University of Vienna was founded by Van Swieten, a Hollander.

Tribute to Maragliano.—Prof. and Senator E. Maragliano of Genoa was tendered an ovation by friends, scientific societies and state authorities on the occasion of his lecture, June 28, as he has reached the age of retirement. This last lecture was a review of what he and his school have accomplished in the nearly fifty years of his connection with the university and since he founded the Maragliano Institute. He was a pioneer in serotherapy of tuberculosis, and was the guest of the University of Pennsylvania for the Phipps lecture in 1904. He is one of the two directors of the *Riforma medica*. A bronze statuette medal and illuminated address were presented to him, and a banquet closed the day.

International Demographic Research on Cancer.—The three countries designated by the Health Committee of the League of Nations to conduct intensive study of cancer in connection with demographic conditions sent their delegates to a meeting at Rome, in June. England, the Netherlands and Italy were represented, the speakers being Drs. Greenwood for England; Jitta, chief of the public health service of the Netherlands, and Aschieri for Italy. The tabulated statistics included the civil status, sex, age, profession and other details in cases of cancer of the uterus and breast; in Italy, cancers elsewhere had been included in the research. On the basis of the discussions a committee was appointed to draw up a general plan for concerted action in the line of cancer research in different countries. The members of the committee are Drs. Greenwood for England, Niceforo for Italy and Jitta for the Netherlands.

Personal.—The Cagnola prize (gold medal and 2,500 lire) has been awarded by the Lombardy Academy of Sciences to Dr. E. Greppi of Milan for studies on hemoglobin metabolism.——Dr. E. Suñer, Madrid, has joined the editorial staff of the *Informaciones*, a Madrid evening daily paper.——Dr. Z. Glorieux, inspector general of the institutions in Belgium for the insane and the abnormal, is to preside at the twenty-eighth annual meeting of the alienists and neurologists of French speaking countries, to convene at Brussels, August 2-7. Dr. E. de Massary, Paris, former president of the French Société de neurologie, is to preside on behalf of the neurologists.——Prof. E. Levi, founder of the Italian Institute for Hygiene and Welfare Work, has offered a prize of 10,000 lire for the best work on the pathology of cancer published in the preceding two years; also a second prize of 15,000 lire for the best work on ways and means to correlate the various agencies for welfare work in different communities. These prizes are open only to Italians.——Dr. Galvez Ginachero has

been appointed director of the large new maternity which was recently opened at Madrid. Dr. Bourkaib is assistant director and the staff includes Drs. Luque, Macau and Navarro Blasco.——Dr. Casares Gil, professor of chemical analysis and laboratory technic at Madrid, has left for Argentina to lecture, on the invitation of the Asociación Cultural Española of Buenos Aires.——Prof. A. Lorenz, Vienna, has been elected an honorary member of the Swedish Medical Association and of the Society of Orthopedists of the Northland.——In honor of the sixtieth birthday of Prof. F. Lange, Munich, the forty-sixth volume of the *Zeitschrift für orthopädische Chirurgie* has been issued as a souvenir volume.——Among those professors who are retiring from their chairs on account of age this year are Profs. P. Albertoni, Bologna; G. Romiti, Pisa; R. Stintzing, Jena; G. Winter and H. Falkenheim of Königsberg; R. Metzner, Basel, and B. Grassi, Rome.——One of the tributes paid to Prof. B. Grassi on the occasion of his recent seventieth birthday was the founding of the Grassi endowment to "promote zoologic study of the zooparasitic diseases." Grassi was a pioneer in the study of the transmission of malaria by insects.——Dr. K. Wittmack, professor of otology at Jena, has been awarded the Netherlands Guyot prize.——Prof. V. De Giaxa was the founder of the Institute of Hygiene at Naples and on his recent seventy-fifth birthday, the first prizes were awarded from the recent endowment in his honor at the institute. A tablet commemorating the occasion was unveiled.

Deaths in Other Countries

Dr. **P. Muntendam,** for twenty-five years assistant editor of the *Nederlandsch Tijdschrift voor Geneeskunde.*——Dr. **P. Brenan,** Magdalena, Argentina.——Dr. **Euclydes de Aguiar** of the Brazilian army, died at Paris.——Dr. **A. Ferreira Caire** of Rio de Janeiro, member of the national legislature for two terms, aged 45.

Government Services

Medical Students in Camp at Carlisle Barracks

As part of the program of the War Department for reserve officers' training camps, there has been formed a Provisional Medical Battalion at Carlisle Barracks, Pa. In attendance at the camp there are 404 students from medical colleges located in the eastern part of the United States. The activities of the camp are carried on in connection with the Medical Field Service School at Carlisle Barracks. Instruction is given to medical students taking the course in all phases of medical activity that might be anticipated in war. The Provisional Medical Battalion is in charge of eleven camp staff officers who are assisted by a corps of nineteen reserve medical officers.

Examination for U. S. Public Health Service

An examination for entrance into the regular corps of the U. S. Public Health Service will be held September 15 at Washington, D. C., Chicago, San Francisco and New Orleans. Candidates must be between 23 and 32 years of age, graduates from some reputable medical college, and have had one year's hospital experience or two years in professional practice. Successful candidates will be recommended for appointment by the President with the advice and consent of the Senate. Requests for permission to take this examination should be addressed to the Surgeon General, U. S. Public Health Service, Washington, D. C.

Hospital Authorized

Pursuant to instructions of the Secretary of War, June 27, 1922, the organization of Evacuation Hospital 67 (Missouri Baptist Sanitarium Unit, St. Louis), organized reserves, has been authorized.

Army Medical Bulletin

The January number of the *Army Medical Bulletin,* just received, is an epitome of army regulations which particularly concern the medical department, and is like that used at the Army Medical School. This number of the *Bulletin* will be especially valuable to officers of the reserve. It was published by the commandant, Medical Field Service School, Carlisle Barracks, Pa.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 7, 1924.

Infant Welfare Congress

Seven hundred delegates from twenty-nine different countries in the British Empire and from the United States were present at the third English-Speaking Conference on Infant Welfare, held under the auspices of the National Association for the Prevention of Infant Mortality and National Baby Week Council. Mr. John Wheatley, minister of health, presided at the opening meeting. In his address, he said that it was not satisfactory to find that little or no reduction in maternity mortality had taken place during the last thirty or forty years. The first consideration of the conference should be the care of the mother. We should never have a satisfactory state of affairs until we had homes in which it was safe for children to be born. The steady rate of maternity mortality was causing grave concern to observers of our social life, and was engaging at the moment the closest attention of the ministry of health. Much of this mortality was preventable, and he appealed to the conference to pool its experiences in a national and international effort at prevention. At present, a large amount of suffering was associated with motherhood, and it was their business to make it a less hazardous matter. He was appealing to the local authorities to consider how they could improve conditions locally, and asking their cooperation in the delineation of a national policy. He hopes in the near future to assist in a rapid extension of and improvement in the midwifery services. Not only were there still many rural districts in which women were beyond the reach of the midwife and miles from the physician's residence, but even in the towns we still employed untrained women. With regard to maternity homes, the ministry was now aiding 135 to be accessible to all who need them.

Turning to infant mortality, he was gratified to find that it had fallen 50 per cent. in a generation. Infant deaths in this country reached 150 per thousand in 1900, and in 1923 they had been reduced to 69 per thousand. Nevertheless, we still had our black spots, particularly in the industrial areas. The woman who required help most of all is the woman who boasted that she didn't want any help or information as she had already buried nine children. There were now 2,000 welfare centers in the country, and in time he hoped that there would be one in reach of every woman. The growth of civilization was going to be regulated by the rate at which the armies of destruction are reduced and the armies of preservation increased. He did not want to criticize his predecessors, but he felt that the nation which spent hundreds of millions of pounds on drink and millions of pounds on maintaining armies could afford to spend more than in the past on the preservation of its young.

Childbirth in India

Col. R. J. Blackman described the appalling conditions of childbirth in India, which are largely due to religious ideas. The notion that at the supreme hour of her existence the woman is a source of defilement to others determines her whole entourage. Usually the birth takes place in a small, dark room, almost devoid of all means of entrance for light and air. The low, narrow door is covered with matting and sacking. The window, if there is one, is darkened with wooden shutters. and any chinks are closed up with paper or rags. After the birth of her child, the young mother—often only 12 or less—lies unwashed in an atmosphere of incredible

foulness, undergoing a dietetic regimen of the utmost severity. Milk and every kind of nourishing food are forbidden for the first week; water is given sparingly, but bitter drugs and condiments freely. Generally speaking, gruel finds its counterpart in rice and pepper water.

Vital Statistics in England and France

In England we are inclined to look on our vital statistics with complacence and to regard the French as practicing birth control to an extent prejudicial to their future as a nation. The stationary population of France, as compared with the increasing one of England, is usually thus explained. But though the declining birth rate of this country is a commonplace which has been repeatedly pointed out in previous letters during the last quarter of a century, it will come as a surprise to most of our citizens to find that our birth rate is now as low as that of France. Where we have the advantage is in a lower death rate and particularly in lower infant mortality. It is the latter which, notwithstanding the falling birth rate, leaves us still a progressive country as regards population. The population in 1923 of France was 39,209,518, of England and Wales 38,403,000. While these populations are nearly equal, there were actually more births in France than in England and Wales. Yet the population of England and Wales was increased by excess of births over deaths more than three times as much as that of France. This is shown by the following table, given by the Paris correspondent of the *Times:*

	Births	Deaths	Deaths of Infants Under 1 Year	Natural Increase of Population by Excess of Births over Deaths
France	761,861	666,990	73,283	94,871
England and Wales.....	758,386	444,869	52,362	313,517

The number of deaths of children under 1 year per thousand births in 1923 was ninety-six in France and sixty-nine in England and Wales. The prevalent practice in France of putting children out to nurse is believed to result in the deaths of 50 per cent. of those so treated.

The Increase of Cancer

The increase of cancer and its cause and prevention have become a prominent theme in the lay press, partly perhaps from want of some sensational subject with which to thrill the public. A political writer, Mr. Ellis Barker, though devoid of any medical training, has had the temerity to produce a book, "Cancer, How It Is Caused and How It Can Be Prevented." It is, of course, only a compilation, and has been written with more industry than discretion. Sir Arbuthnot Lane has written an introduction, and says that the book "displays a knowledge most remarkable in a layman." But the *Lancet* describes Mr. Barker as "ill informed," as he has readily fallen into the fallacies that are so common when people endeavor to argue from statistics. His view is that cancer is a result of civilization in general and of constipation, chronic poisoning by chemicals used as food preservatives, and vitamin starvation in particular.

Smallpox Again

Nine cases of smallpox have occurred in one house in Harlesden, a northwestern suburb of London. Three of the patients, two adults and a child, have died. The first to contract the disease was an unvaccinated girl of 3 years. Then both her parents, her brother and two sisters were attacked. The other victims were a woman and her two children, who lived in the house. Five of the nine persons attacked were unvaccinated. It is significant that none of the vaccinated persons have been vaccinated in the last seven years. The neglect of vaccination in this country is shown by these figures, but, as usual, the scare caused by the outbreak has made the local vaccination officers very busy. The present situation is illustrated by the application just made in London to a magistrate for a certificate of exemption from vaccination by a woman who said she had had none of her children vaccinated. The magistrate said: "The whole lot will die if there is an outbreak of smallpox, and you too very probably. It is madness to do this." But he granted the certificate, as he is bound by the law to do to any parent declaring that he or she has a conscientious objection to vaccination.

Rockefeller Medical Fellowships

The Medical Research Council announces that it has awarded Rockefeller medical fellowships, tenable in the United States during the academic year 1924-1925 to R. K. Cannan, M.Sc. (Lond.), senior in biochemistry, University College, London; J. J. Conybeare, D.M. (Oxon), M.R.C.P. (Lond.), assistant physician and warden of the college at Guy's Hospital, London; J. R. Learmouth, M.B., Ch.B. (Glas.), assistant to the professor of surgery, Anderson College of Medicine, Glasgow; Ethel Marjory Luce, M.D. (T. C., Dub.), Lister Institute of Preventive Medicine, London; J. W. McNee, D.S.O., D.Sc., M.D. (Glas.), M.R.C.P. (Lond.), senior assistant in the medical unit, University College Hospital, London; W. Robson, B.Sc. (Lond.), chemical assistant in the department of therapeutics, University of Edinburgh.

Instruction of School Children in Dietetics

The Teachers' National Committee for the Promotion of the Teaching of the Hygiene of Food and Drink in Schools has made an appeal through the press to the principal teachers throughout England and Wales who are now preparing their schemes of work for the coming year, to find a place for the teaching of this subject, if not already included in the curriculum. At the meeting held in Scarborough during the conference week of the National Union of Teachers, where the committee was constituted, a resolution was unanimously passed, expressing cordial appreciation of the board of education syllabus, "The Hygiene of Food and Drink." This syllabus is widely recognized as an admirable piece of work. The committee fully sympathized with those teachers who felt the difficulty of finding a place for another subject in the curriculum; but the experience of many teachers had shown that the syllabus can be covered in far less time than may at first be thought, and that, by including the teaching in elementary or domestic science, or by a rearrangement of the work by which the lessons take the place of single lessons in a variety of subjects, the syllabus can be adequately taught without taking too much time from other subjects. It has, indeed, been found that the whole syllabus can be adequately covered in thirty-six lessons of forty minutes each, spread over the last three years of a child's school life.

Atmospheric Pollution

The ninth report of the Committee for the Investigation of Atmospheric Pollution, covering the year ended March 31, 1923, has been issued. The first section deals with the results obtained by "the standard deposit gage" in which atmospheric impurity accumulates month by month with the rain. There was a distinct improvement in the purity of the air during the year, as compared with the average of preceding years. The highest total deposit is shown in Rochdale and the lowest in Rothamsted; the greatest amount of tar was deposited in Newcastle-on-Tyne, while the highest deposit of sulphates was found in Southwark Park, London. A new form of stoneware gage has been introduced as an improvement on the original form, which has been tried for more than five years. The results obtained with "the automatic filter," which measures hour by hour throughout the day and night the amount of impurity suspended in the air, are given. It shows in all places a maximum in the morning.

There is a tendency in London toward a reduction in suspended impurity toward the end of each week. The fourth section deals with an instrument called the "jet dust counter," which secures the microscopic examination of dust particles and their number, irrespective of their color or nature. The use of the instrument has extended rapidly both in England and in foreign countries. Its high efficiency and convenience of operation make it of great value in the examination of all problems connected with air-borne dust. Some curiously interesting results have been obtained with this instrument, as, for example, the discovery of spherical glassy particles in the air, the sudden appearance of large numbers of mold cells in the air during the autumn—traced to falling leaves—and the occasional presence of crystals of soluble salts in the air. The report thus is based on the most recent advances in technic. It indicates that too little attention has been given to the need for keeping pure the air in which we live.

PARIS

(From Our Regular Correspondent)

June 27, 1924.

The Communication of Prof. Charles Richet

The daily press is making considerable ado about a communication that Prof. Charles Richet, the physiologist, presented recently to the Academy of Sciences on the treatment of human tuberculosis by the juice of dried meat. As is usual, under such circumstances, the papers exaggerated the range of the facts and proclaimed for the hundredth time that tuberculosis had been vanquished.

A quarter of a century has elapsed since Richet and Héricourt established that tuberculinized dogs, when fed exclusively on raw meat, became resistant to tuberculous infection, while other dogs, also tuberculinized but fed on a different diet, all died no matter what treatment and diet were instituted. Richet and Héricourt were able to demonstrate that the efficacy of raw meat in the treatment of tuberculous infection in dogs was due solely to the juice of the meat such as is produced by extraction. But when an attempt was made to apply zomotherapy (ζωμός, meat-juice) to man, practically insurmountable difficulties were encountered. The difficulties, Richet thinks, have now been overcome through the industrial preparation of a meat-juice derived from dried meat (to which he has given the name "zomine"), which, it is asserted, has all the properties of the juice of fresh meat. Zomine has been tried out on tuberculous soldiers, all of whom gained in weight. Does their gain in weight prove that tuberculosis has retrogressed? Richet is inclined to think it does. Clinicians will not be ready to accept his opinion, and, as Dr. L. Cheinisse states in the *Presse médicale*, in order to judge exactly of the value of the method the observations must be more complete—not confined to recording the variations in body weight and in muscular strength, but should include auscultatory examinations, examination of the sputum, roentgenographic examination of the lungs—in short, all the clinical findings that modern medicine considers the true test of improvement in tuberculous patients.

Raw Foods and Fermented Foods

With the exclusivism that characterizes the scientist pursuing a pet idea, Prof. Charles Richet maintains that raw foods constitute the normal diet of man. Our physiologic constitution, he says, is determined by the structure of our animal organism, which is dependent on an enormously long line of ancestral organisms. Our more remote ancestors always lived on raw foods. Man's diet is an exceptional one—therefore a poor one.

The foregoing statements of Richet have been challenged. In a communication to the Société de médecine publique, Dr. A. Gauducheau states that, if man had not learned how to purify his food by fire, the existence of cities would have been impossible, for the pathogenic flora and fauna of the intestine (helminths, protozoa, and the bacteria of cholera, typhoid and dysentery), polluting the soil and the waters of the earth, would have exterminated the human race. Man is the only animal that heats his food, but he is also the only animal that seeks with avidity fermented products, as if to find in the latter some vital substance to compensate for that which he destroys by cooking. We ingest every day with our bread, lactic foods, meats, wine, etc., large quantities of nutritive matter already partially digested by micro-organisms. In many cases, the fermentative action of microbes is auxiliary to and prepares the way for our own digestive process. Whence comes this predilection of man for fermented food? Gauducheau assumes that the origin must be sought in the conditions under which primitive men lived. When one reflects as to what might have been the food of our most distant ancestors, before the invention of agriculture, one is forced to admit that their ignorance of the artificial growing of food plants compelled them to accumulate reserve supplies to ward off the dangers of famine; that such supplies, stored away in the recesses of their caves, were subject to fermentation, and that at that remote period the natural food of man was not always meat and fresh fruits but very often and from necessity fermented products.

Opening of a Subscription for the Completion of the American Hospital in Paris

The American colony in Paris has opened a subscription for funds needed to complete the Memorial Building which is adjoined to the American Hospital of Paris. Hon. Myron T. Herrick, the United States ambassador, and the consul-general, Mr. A. M. Thackera, are at the head of the committee, of which Mr. Charles F. Greene is the president. The American Hospital is located at Neuilly-sur-Seine, occupying a portion of the old site of Neuilly Park, and includes an area of about 1,500 square meters. The construction is being carried out in accordance with American ideas and methods. The present hospital contains only thirty-two beds, and is not adequate to the needs of the Americans living in France or in Europe, together with the tourists and those who come here on business. It is planned to increase the bed capacity to 120. The sum of $1,097,000 will be required to complete the buildings and provide for their equipment, of which approximately half still needs to be subscribed. Subscriptions may be sent to any one of the American banks in Paris charged with the collection of the funds; for example, Morgan, Harjes & Co., 14, Place Vendôme, Paris, or The Equitable Trust Company of New York, 23, rue de la Paix, Paris.

The Supervision of Children During School Vacations

Dr. J. Sebilleau, acting professor at the School of Medicine at Nantes, recently called attention to the fact that many children who spend their school vacations at the seashore, far from profiting from their sojourn, return to the city much thinner than they were, complaining of headache, fatigue on the slightest effort, pains in their arms and legs, and loss of appetite. When they return to their classes, they are inattentive, and their memory is defective. On examining them more closely, one is struck by their pallor. Their faces have a yellowish tinge; their features are drawn, and their eyes are sunken. Their internal organs, however, are intact and examination does not throw any light on their condition. But, on inquiring of the parents, Sebilleau learned that the children, during their outing, left their beds very early in the morning and ran to join their schoolmates on the strand, where they indulged in frenzied races, boisterous and disorderly games, endless sets at tennis, and long bicycle races. After a hasty lunch, consisting often of indigestible foods,

they ran, often before they had swallowed the last mouthful, to resume their exploits until dinner time, after which they usually went for long walks and in consequence did not go to bed till late. Most of the children were in the water for a long period every day, while some went in twice a day. It appears from these statements that much closer supervision of their activities is needed. Even the hardier children are not able to stand such a prolonged strain.

BUCHAREST

(From Our Regular Correspondent)

July 7, 1924.

Prohibition of the Use of Both White and Yellow Phosphorus for Matches

There came into force, July 1, a law that prohibits the use of both white and yellow phosphorus in the manufacture of matches. Their importation from other countries and their sale are also forbidden. The probihition is suspended only with relation to the lighting cords used in mines for safety lamps. This new law is the result of repeated urging by the medical board of the workmen's insurance office, which has to support for the remainder of their lives hundreds of workmen who have become incapacitated on account of phosphorus poisoning. One of the wards of the surgical section of the university clinic had always many cases of phosphorus necrosis, the destruction of tissue being mostly so extensive that treatment was of no avail.

Mortality from Diabetes

The statistical records of Roumania show that the death rate from diabetes has been increasing of late years, the pre-insulin era being considered. In the year 1922, 959 deaths were registered from that disease, being 6 in each 100,000 population. Only 4.5 deaths in each 100,000 were caused by diabetes in an average in the period from 1900 to 1910, but nearly 6 in 1921. It is suggested that the increase is partly caused by the growth of luxury, by the greater consumption of rich food (Roumania is a country where foods are still relatively very cheap) and also by the nervous strain connected with modern life. On the other hand, the seeming increase may be due to more accurate diagnosis. With respect to individual trades and professions, it has been found that persons engaged in the preparation and sale of foodstuffs and spirituous liquors, soldiers, and men belonging to the civil and ecclesiastical services had a relatively higher death rate from diabetes than other classes of the population.

Hemorrhagic Smallpox on Board a Ship

A steamer coming from Odessa to an Albanian port brought several hundreds of Mohammedan passengers, among them seventy children and thirty infants. On the voyage, five of the passengers died from acute diseases and were buried at sea. The steamer and its passengers have been subjected to a strict medical supervision, and as three cases of hemorrhagic smallpox were found on board, orders were given that all the passengers should be vaccinated and the ship thoroughly disinfected.

Raising of the Fees of Medical Practitioners

The general increase in the cost of food and clothing, in consequence of the continuous depreciation of Roumanian currency and the rise in rents and taxes, has involved the raise of medical fees. As, however, there is a decree of the minister of public health establishing a minimum scale of fees in the different towns and in general throughout the country, most people pay only this minimum. When actions are brought for the recovery of fees, the civil court always orders the defendant to pay the minimum fees determined by the minister of public health. The fees of family practitioners are, however, not determined on this principle, and in most towns the local associations have announced a rise of 30 per cent. in the fees payable to family practitioners, a change which in most cases was not opposed. According to this rise, the fees now charged are as follows: In towns up to 30,000 inhabitants, taking families of moderate income and consisting of from four to five members, the fee of a family practitioner is 3,000 lei ($15). In Bucharest the fee is from 5 to 10,000 lei. These medical fees are paid in half-yearly instalments. Extra fees have sometimes to be paid for night calls, for consultation, for visits in sanatoriums and hospitals, and for midwifery and surgical orperations. In view of the fact that the average fee at the patient's home amounts to 100 lei (about 40 cents) even in the smallest towns, having from 8,000 to 10,000 inhabitants, it may be said that the present position of the medical profession in Roumania is satisfactory. During the last two or three years, the number of new students has been so great that the minister of public instruction is intending to lengthen the curriculum by one year in order to check overcrowding.

The Diet in Advanced Life

Before the Medical Society of Cluj, capital of Transylvania, Dr. Hatziegan, teacher of clinical medicine, recently delivered a lecture on the diet in advanced life. He said that theoretical considerations suggest, and practical experience confirms, the view that each decade of life, has its special dietetic conditions. The elderly man automatically reduces his output of energy, and his tissues no longer utilize more than a limited amount of nutriment; consequently, if he maintains his dietary at the adult standard, there must result a disturbance of physiologic equilibrium. This principle, of course, does not preclude the liberal nourishment of the aged under special circumstances, but it entails the recognition of the axiom that the aged require less food than persons in the active period of adult life. The measure of their diet will have to be based on the functional activity of their organs.

BELGIUM

(From Our Regular Correspondent)

July 8, 1924.

Ions of Metals in Relation to Neoplasms

Among the numerous researches undertaken in connection with the anticancer crusade, a series of studies by Slosse and Reding, a preliminary report of which has just been communicated to the Royal Academy of Medicine, presents unusual results. According to the belief of these investigators, the mineral content of the tissues of the human organism is of exceedingly great importance; in fact, it is, in a sense, the regulator of all life; it is, indeed, the substratum or underlying principle of life. It is doubtless the state of balance or the equilibrium of the ions of metals that determines the character of cellular life and directs it in definite paths. It seems furthermore well established that the potassium, calcium, zinc, phosphorus and iron content of the ash of a tumor is characteristic of a given tissue, so that it is possible to speak of a normal tissue, an inflammatory tissue or a malignant tissue, and, in fact, to distinguish between various types of malignant tissues.

The authors have published a series of experimental and clinical results which, they assert, demonstrate the influence of the ions of metals on neoplasms. It appears that the action of the ions is exerted primarily on the surrounding tissues and only secondarily on the tumor. Subjects with large tumors become insensible to the cachectic action of the neoplasm; they seem to be carrying in them an inert foreign body. In patients with small tumors, the most striking manifestation is the rapid and complete restoration of the general health, and secondarily, although this phenomenon does not

present any great importance, the neoplastic tissues disappear insensibly.

From a comparative study of the various metallic elements, one might conclude that all the ions have not the same action. There is no doubt that potassium exerts an unfavorable influence, as Waterman has already shown, but, contrary to the opinion of Waterman, the authors hold that calcium (at least, under certain circumstances) is a very harmful element. On the basis of these findings, obtained at first experimentally on mice, the authors have endeavored to modify the equilibrium of the body fluids of patients by the introduction of the following ions of metals: magnesium in metallic form in needles, in the form of iodid, chlorate and, especially, sulphate; magnesium sulphate in ionized form, used intravenously and intramuscularly, in large doses of from 4 to 10 gm. and for protracted periods; metallic copper and copper sulphate, used intravenously in ionized form; lead in the form of a subacetate for injections and nitrate in ionized form, and bismuth in the form of quinin iodobismuthate.

The authors conclude from their findings that there is an organic defense against cancer. The experimental studies on mice seem to have been convincing. The most suggestive experiment was conducted with a number of mice divided into two groups. The first group received no preliminary treatment, but were scarified with tar in the nape of the neck. All these animals developed cancer. The second group was subjected to the same treatment but after preliminary injections of metallic salts (magnesium and copper); more than 90 per cent. of the animals of this group developed no lesion.

The Association of Medical Hygienists

As a result of the opportunities to study the public health work of foreign countries that have been afforded by the interchange of public health officers, which became possible through the financial support of the health section of the League of Nations, these health officers have founded an international association of medical hygienists under the name of International Society of Public Health Physicians, forming thus a federation of all groups of scientists with a similar task before them. With a view to entering into this plan and becoming a constituent society of the larger group, the medical hygienists of Belgium have decided to unite and form the Association des médecins hygiénistes de Belgique. Its membership will be made up of physicians attached to the public health service of the state, the provinces and the communes; the professors of hygiene in the universities and affiliated institutions; the directors of state laboratories, and, in general, all medical hygienists by profession. Drs. Bordet, Gengou, Herman and Malvoz have promised their support to the enterprise.

Tuberculous Abscesses

A new method for the treatment of tuberculous abscesses and fistulas was recently presented by M. Depage before the Royal Academy of Medicine. It is a new operative method recommended by Dr. Schwers, who considers this technic as a radical cure. The principle is based on the transformation of the abscess into an internal wound, which is capable of healing by first intention. This is accomplished by a mechanical act, a surgical curettage, carried out under conditions which assure for the site the maintenance of its qualities as a closed and aseptic lesion.

A small incision a little larger than the scalpel gives access at the focus to the curet, which, as it works, is protected from the air, and through the incision evacuates the pus and the products of curettage. A small aseptic dressing is placed over the wound, which requires no suturing, no ligation, no disinfection and no drainage. In all the recent cases a healing by first intention of a ganglionic abscess is being accomplished. Almost 500 abscesses in 150 patients have been treated. Of forty-nine patients with a single abscess or a single ganglionic fistula, twenty-six, or 60 per cent., have been cured, the wound healing by first intention; of the remaining 40 per cent., half were cured after a variable lapse of time—in from fifteen days to three months; in the remaining 20 per cent. a cure was effected only at the end of from three to six months. In 1921-1922, the author was able to see again about half of the patients operated on between 1915 and 1920, and assured himself that the cure was permanent.

Protection of Society Against Dangerous Psychopaths

A few weeks ago (The Journal, June 7, 1924, p. 1877), I referred to the discussions that were held before the Société belge de médecine mentale on the urgent need of protecting society against insane persons who are allowed too large a measure of liberty. The outcome of the discussions was the unanimous adoption of the following resolutions:

1. The Société de médecine mentale de Belgique, with a view to the protection of society, contends that, before insane persons who have proved to be dangerous shall be given their liberty, all necessary precautions should be taken. It holds that the liberation of an insane person, and especially of one who has been adjudged dangerous, is not justifiable or authorized except on the advice of a board of professional medical alienists.

2. Patients interned may not be withdrawn from an institution by those who put them there except with the consent of the medical director of the establishment.

3. Examinations in mental cases should be conducted exclusively by professional psychiatrists, as regards both the examination of suspects and the contemplated liberation of patients.

The Flemish Medical Convention

The third Flemish medical convention has just been held at Ghent, a Flemish university city and a center of Flemish influence. The cancer problem was the main topic on the program. This was the first time that a definite topic was chosen, the two previous conventions having been devoted to a week's study of practical medicine in the various fields. Several French and Netherlandic scientists were guests of the convention; notably, Professor Lacassagne of Paris and Professor Lorentz of Haarlem. Professor De Beule outlined the treatment that he recommends for cancer of the breast, it being a combination of roentgen-ray and surgical treatment. Before the surgical removal of the cancer, he applies roentgenotherapy in five fields; the thorax, subclavicular and supraclavicular fossae, the arm pit and the dorsal region. The operation follows, the supraclavicular and subclavicular ganglions being likewise removed. In the subclavicular fossa, at the time of the operation, a 25 mg. radium needle is introduced, which is filtered through 2 mm. of platinum, 0.1 mm. of aluminum and 3 mm. of caoutchouc. This needle is left for ten hours. Three weeks after the operation, a second application of roentgen rays over five fields is made.

The Practice of Dentistry

The continual conflicts between dentists and graduate physicians with reference to the practice of dentistry have given rise to numerous discussions, and for several years the various professional societies have brought forward arguments for the introduction of some system of uniform regulation. At present, the profession of a dentist (a nongraduate physician) is subject to the decree of 1918, which recognized the post of dentist. The council for the betterment of higher instruction has brought the question up again and is now demanding additional guarantees before the title of dentist will be conferred. In keeping with this movement, the minister of arts and sciences has presented a bill which provides for the creation of a degree to be termed *"licencié en sciences dentaires,"* or licentiate in dental science. A com-

mittee of the Royal Academy of Medicine has been appointed by the minister to inquire into and report on the resolutions passed by the aforementioned council. The committee has prepared a report, which will be discussed at a plenary assembly of the academy. The principal conclusions reached by the committee may be thus summed up:

1. A degree of doctor of dental science should be established.

2. The proposed law creating the degree of licentiate in dental science is hereby endorsed.

3. The committee approves the plan of examinations leading to that degree; namely:

(*a*) The same training in the sciences and in the ordinary principles of medicine that is required of future doctors of medicine, surgery and obstetrics.

(*b*) At least two years of special training, including the same courses in general pathology, pathologic anatomy, pharmacodynamics and pharmacology that is required of future physicians.

The committee recommended that a resolution be adopted to the effect that it was desirable, at some time in the future, that the practice of the art of dentistry be restricted to doctors of medicine, and that it would be unwise to create for doctors of medicine the degree of licentiate in dental science.

BERLIN

(From Our Regular Correspondent)

June 28, 1924.

The Significance of Hormones in the Pathogenesis and Therapy of Rickets

In No. 27 of the *Deutsche medizinische Wochenschrift*, Vollmer reports the results of his investigations, conducted in the Kaiserin Auguste Victoria Haus in Berlin, on the significance of hormones in the pathogenesis and therapy of rickets. Vollmer was able to establish that the suprarenals, the hypophysis, the thyroid gland, the thymus and the ovary reduce materially acid elimination by the urine and accelerate intermediary metabolism, whereas the parathyroid glands exert an antagonistic action. Epinephrin showed a two-phase action. The first phase, which is associated with an increased acid elimination, is, according to his own findings and also the findings of other authors, characterized by a decrease in phosphorus and potassium, an inconstant increase in calcium and a hyperglycemia, whereas the second, alkalotic, phase is marked by an increase in phosphorus and potassium, a decrease in calcium and hypoglycemia. The first, acidotic, epinephrin phase Vollmer regards as the blood chemical syndrome of rickets; the second, alkalotic phase as the symptom complex of tetany. He succeeded thus in producing experimentally—in part, at least—by means of a hormone, the physicochemical changes of rickets and tetany, or in bringing about the opposite conditions. He succeeded also, through extracts of the hypophysis, the thymus and the ovary, in increasing the blood phosphates and diminishing the acid elimination. Thus the theoretical and experimental bases for a hormone therapy of rickets were established. In collaboration with György, Vollmer succeeded, through subcutaneous injection of extracts of the pituitary, the thymus and the ovary, in curing florid rickets, from the clinical and blood-chemical standpoint, in from two to three weeks, on an average.

Further investigations discovered close connections between skin irritations and metabolic processes in the organism, brought about through the agency of the vegetative nervous system. The action of the ultraviolet rays in accelerating metabolism and curing rickets could thus be comprehended as the effect of an actinic skin irritation. It was discovered also that hormones are easily absorbed through the skin, and that therefore the subcutaneous and the intramuscular mode of injection can be avoided. Langstein and Vollmer then undertook to administer hormones in the form of ointments. In large numbers of rachitic patients they carried out daily inunctions with ointments which contained, in turn, extracts of the hypophysis, the thymus and the ovary. Excluding every other form of therapy, they report clinical cures in most cases in an average period of three weeks.

Mortality in Germany in 1923

Since 1921, the death rate of Germany has remained at a minimum that had not been previously attained. The large cities and also the smaller towns owe their present low death rate mainly to the changes in demographic conditions, in that the proportion of persons found in the strong and sturdy age groups throughout the whole population has increased markedly at the expense of the weaker elements, the children and the aged. When the birth rate of the domiciled population drops to 14.2 per thousand, as was the case in the large cities of Germany in 1923, it is not surprising that the percentage of children dying out of such a low birth total had only a very slight effect on the average death rate. The marked decrease in mortality since the war is not peculiar to Germany, but has been observed also in other countries. The general death rate of England has always been lower than that of Germany, mainly because of the fact that the infant mortality rate of England was not much more than half as high as the rate of Germany. In 1921, the infant mortality rate for England was 83 and in 1923 only 69, whereas the rate for Germany in 1921 was still 134.

The Relations Between Body Weight and Energy Exchange in the Animal Kingdom

In an address delivered recently before the Prussian Academy of Sciences, Professor Rubner discussed the relations between body weight and energy exchange. The researches on growth, body formation and energy exchange were extended to the cold-blooded animals. The fundamental principles of growth metabolism are everywhere the same. In warm-blooded animals, energy exchange stands in a causal relation to the surface of the body, but this is not the case in cold-blooded animals. As the body increases in size, a diminution of the relative energy exchange takes place. The beginning of every development coincides with a maximal relative energy exchange, which in the course of development, with the attainment of completed growth, is reduced to the energy exchange of the parent stock.

Marriages

WILLIAM P. GILMER, Clifton Forge, Va., to Miss Catherine Newman of Baldwin, Miss., June 2, at Seone, Korea.

PAUL FREDERICK WHITAKER, Kingston, N. C., to Miss Pocahontas Farrar Lipscombe of Richmond, Va., June 11.

EDWARD HALSELL FITE, Muskogee, Okla., to Miss Elizabeth Coleman Williams of Charlottesville, Va., June 13.

JOHN ALEXANDER COLEMAN, Miami, Fla., to Miss Mary Matthews Dabney of Richmond, Va., June 24.

GLENN GREER ENGLISH, Indianapolis, to Miss Kathleen Elizabeth Young of Los Angeles, July 15.

WILLIAM AMBROSE MCGEE, JR., to Miss Lois Marie Johnson, both of Richmond, Va., June 24.

ROLAND B. WHITRIDGE, New York, to Mrs. Florence S. Lippincott of Philadelphia, July 11.

ALLEN MOORE KIMBROUGH to Miss Carrie Nelson Berkeley, both of Richmond, Va., June 17.

WILLARD D. WHITE to Miss Evangeline Skellett, both of Minneapolis, in June.

HAROLD WAHLQUIST to Miss Margaret H. Schem, both of Minneapolis, in June.

Deaths

George Ensign Bushnell ✠ Col., U. S. Army, retired, Pasadena, Calif., died, July 19, aged 70. Colonel Bushnell graduated from Yale University School of Medicine, New Haven, Conn., 1880; was appointed assistant surgeon in the U. S. Army, 1881; colonel, 1911, and was retired for age in 1917. He was for fourteen years commanding officer at the U. S. Army General Hospital, Fort Bayard, N. M., and during the World War served in the Surgeon General's Office as chief of the tuberculosis section of the division of medicine. He was honorary vice president of the National Tuberculosis Association, a member of the American Climatological and Clinical Association, the author of "A Study in the Epidemiology of Tuberculosis with an Especial Reference to Tuberculosis of Tropics and of the Negro," and many other works on tuberculosis.

Charles Z. Aud, Cecilia, Ky.; University of Louisville School of Medicine, 1868; Bellevue Hospital Medical College, New York, 1871; member and at one time president of the Kentucky State Medical Association; delegate to the American Medical Association in 1911; for eighteen years member of the state board of health, county health officer for twenty-eight years; aged 78; died, July 15.

Samuel Henry Dickson ✠ Medical Director, Captain, U. S. Navy, retired, Nantucket, Mass.; Jefferson Medical College of Philadelphia, 1870; commissioned assistant surgeon in the Navy 1875, medical director in 1909; retired July 20, 1911; served in the Spanish-American and World wars; aged 74; died recently, at the U. S. Naval Hospital, Washington, D. C., of intestinal obstruction.

Mary Belle Brown, Troy, Ohio; New York Medical College and Hospital for Women, 1879; formerly dean, secretary of the faculty, lecturer on chemistry and physiology and professor of diseases of women at her alma mater; aged 78; died, July 13.

Euel H. Lyon, Bahama, N. C.; University of Maryland School of Medicine, Baltimore, 1903; member of the Medical Society of the State of North Carolina; aged 49; died, July 6, at the Watts Hospital, West Durham, following a long illness.

William Earl Kriess, Evans City, Pa.; University of Pittsburgh School of Medicine, 1900; served in the M. C., U. S. Army, during the World War; aged 52; died, July 2, at the Western Pennsylvania Hospital, Pittsburgh, of heart disease.

Henry Herbert Thorp, Southampton, N. Y.; Medical Department of Columbia College, New York, 1890; member of the Medical Society of the State of New York; aged 60; died, July 4, of chronic endocarditis and chronic nephritis.

William Bert Reynolds, Rockville, Mo.; Ensworth Medical College, St. Joseph, 1901; member of the Missouri State Medical Association; aged 49; died, July 14, at St. Joseph's Hospital, St. Joseph, following an appendectomy.

Peter Phillip Rafferty ✠ Red Bank, N. J.; Medical Department of the University of the City of New York, 1897; served in the M. C., U. S. Army, during the World War; aged 49; died, July 19, following a long illness.

Harvey Lucius Montgomery, Micanopy, Fla.; Atlanta (Ga.) College of Physicians and Surgeons, 1904; member of the Florida Medical Association; aged 48; died, June 18, at Asheville, N. C., of mitral regurgitation.

Franklin Langworthy Carr, Hoquiam, Wash.; Rush Medical College, Chicago, 1884; member of the Washington State Medical Association; aged 61; died, July 11, at the Hoquiam General Hospital, of pneumonia.

Alfred Lind, Minneapolis; University of Minnesota Medical School, Minneapolis, 1891; University of Berlin, Germany, 1894; formerly on the staff of the Swedish Hospital; aged 62; died, June 26.

Charles B. Allen ✠ Parma, Idaho; University of Colorado School of Medicine, Denver, 1905; served in the M. C., U. S. Army, during the World War; aged 50; died, June 21, of pneumonia.

Howard Beirne Burwell ✠ Huntsville, Ala.; Jefferson Medical College of Philadelphia, 1904; aged 44; died, July 11, at the South Highlands Infirmary, Birmingham, of acute nephritis.

John Vernon Taylor ✠ New Philadelphia, Ohio; St. Louis (Mo.) University School of Medicine, 1915; aged 38; died, July 7, at Glen Elder, Kan., of asthma and heart disease.

Walter D. Ouzts, Johnston, S. C.; University of Georgia Medical Department, Augusta, 1887; member of the South Carolina Medical Association; aged 65; died, June 19.

Oliver P. Kemp, South Bend, Ind.; University of Illinois College of Medicine, Chicago, 1898; aged 61; died, July 17, at Kokomo, of a self-inflicted bullet wound.

Ernest Whittier Lowe ✠ Fremont, N. H.; Baltimore Medical College, 1898; served in the M. C., U. S. Army, during the World War; aged 49; died, July 13.

Archibald McKellar, Blanchardville, Wis.; Western University Medical School, London, Ont., Canada, 1888; also a druggist; aged 62; died, July 14.

Charles S. W. Thompson, Helena, Mont.; Hahnemann Medical College of Philadelphia, 1880; aged 64; died, July 11, at a local hospital, of heart disease.

Laurens H. Irby, Woodruff, S. C.; University of Tennessee College of Medicine, Memphis, 1894; aged 59; died suddenly, July 12, of cerebral hemorrhage.

John Clinton Eskew, Mount Juliet, Tenn.; University of Nashville Medical Department, 1866; Confederate veteran; aged 84; died, July 7, of senility.

Obediah McCullough, Guelph, Ont., Canada; Victoria University Medical Department, Toronto, 1891; aged 66; died, June 6, of cerebral hemorrhage.

Arthur Odell Ullrey, Niles, Mich.; Hahnemann Medical College and Hospital, Chicago, 1886; aged 61; died suddenly, July 9, of cerebral hemorrhage.

William McCarter Wright, Baltimore; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1889; aged 57; died, July 18.

Frederick W. Hill ✠ Fairmont, W. Va.; College of Physicians and Surgeons, Baltimore, 1894; aged 60; died, July 8, following a long illness.

Rolla Silas Armstrong, Chelsea, Mich.; University of Michigan Medical School, Ann Arbor, 1868; formerly a druggist; aged 79; died, July 10.

Joseph William Leadenham, Franklin, Pa.; Long Island College Hospital, Brooklyn, 1876; aged 69; died, July 11, of chronic myocarditis.

Ambrose Everett Smith, Olean, N. Y.; Rush Medical College, Chicago, 1885; formerly city health officer; aged 66; died, July 15.

John P. Cleveland, Glasgow, Va. (years of practice); also a druggist; Confederate veteran; died, June 30, of cerebral hemorrhage.

George W. Griffin, Fair Play, Mo.; Missouri Medical College, St. Louis, 1877; aged 79; died, July 7, of heart disease and asthma.

Henry Gereon Graham ✠ Hazelton, Kan.; Northwestern University Medical School, Chicago, 1893; aged 61; died, May 16.

Alvinza B. Cole, Fergus Falls, Minn.; New York Homeopathic Medical College, 1878; aged 75; died, June 8, of heart disease.

Howard E. Randall, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1889; aged 64, died, June 7.

Henry H. Hering, Minneapolis; Miami Medical College, Cincinnati, 1873; Civil War Veteran; aged 83; died in June.

David G. McNeil, Arva, Ont., Canada; University of Toronto Faculty of Medicine, 1891; aged 57; died, June 6.

Vespasian Stookey, Colchester, Ill., College of Physicians and Surgeons, Keokuk, Iowa, 1882; aged 73; died, July 4.

Alexander Archie Bulla, Jackson Hill, N. C. (licensed, North Carolina, 1885); aged 62; died recently.

William Seth Loomis, Toledo, Ohio; Physio-Medical Institute, Cincinnati, 1878; aged 67; died, July 6.

George Paul, Lehigh, Iowa (licensed, Iowa, 1890); aged 81; died, July 2, of cardiorenal sclerosis.

George B. Rawlings, Eldorado, Ill. (licensed, Illinois, 1878); aged 78; died, June 7, of heart disease.

William Nifong, Fredericktown, Mo.; St. Louis Medical College, 1866; aged 82; died, July 1.

Frank Dumont, Freeport, Minn.; University of Paris, France, 1894; aged 53; died in July.

✠ Indicates "Fellow" of the American Medical Association.

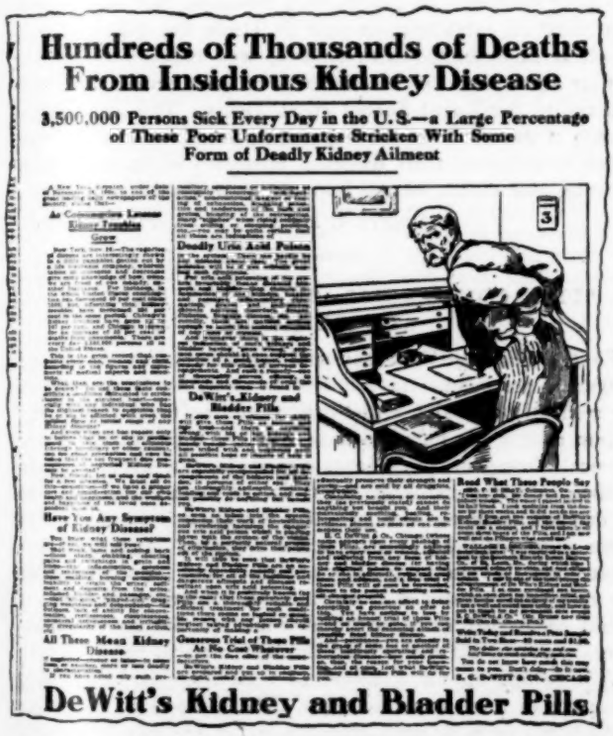
The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

DeWitt's Kidney and Bladder Pills.—E. C. DeWitt & Co. of Chicago, shipped in interstate commerce in September, 1923, a quantity of "DeWitt's Kidney and Bladder Pills" which was misbranded. The pills were analyzed by the Bureau of Chemistry which reported that they consisted


Hundreds of Thousands of Deaths From Insidious Kidney Disease
3,500,000 Persons Sick Every Day in the U. S.—a Large Percentage of These Poor Unfortunates Stricken With Some Form of Deadly Kidney Ailment
Deadly Uric Acid Poison
DeWitt's Kidney and Bladder Pills
Have You Any Symptom of Kidney Disease?
All These Mean Kidney Disease
Read What These People Say
DeWitt's Kidney and Bladder Pills

Greatly reduced reproduction of one of the older advertisements of DeWitt's Kidney and Bladder Pills. Like that of all fake kidney cures, the advertising leads the public to believe that lumbar soreness or pain is a sure symptom of kidney disease.

essentially of methylene blue, potassium nitrate, and plant material, including a volatile oil such as juniper oil. Some of the claims made on or in the trade package were:

"For Weak Kidneys, Inflammation of the Bladder, Scalding Urine and Backache, due to certain kidney disorders."
"For Inflammation of the Kidneys and Bladder."
"For Certain Forms of Rheumatism and Pains in the back."

These and similar claims were naturally declared false and fraudulent. In January, 1924, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 12066; issued July 10, 1924.*]

"DeWitt's Kidney and Bladder Pills" were analyzed by the Kansas State Board of Health some years ago, which in its *Bulletin* for April, 1911, published the result of its analysis. The DeWitt nostrums have long been a menace. One of the methods of distribution has been that of distributing free samples from house to house. A case has been reported in New York state of a six-year-old boy who ate some of the sample nostrums distributed by the DeWitt concern and who, according to the report, "became blind and paralyzed." A physician reported to THE JOURNAL some years ago a case of a little boy who was suddenly taken sick with symptoms of violent gastroenteritis. Inquiry elicited the fact that a man had been distributing the DeWitt Kidney Pills in that neighborhood, and this little fellow had been seen by some of his playmates to eat a number of these pills. The child vomited a greenish fluid and the little urine that he passed was greenish in color, due, doubtless, to the methylene blue. The child finally went into coma and died.

Foster's Backache Kidney Pills.—Between March and October, 1923, a quantity of "Foster's Backache Kidney Pills" were shipped by the Porto Rico Drug Co. and Charles Huisking, both of New York, and the Foster-McClellan Co. of Buffalo, to Porto Rico. When analyzed by the Bureau of Chemistry these pills were found to consist of potassium nitrate, rosin, fenugreek, uva ursi, and an essential oil such as juniper. Some of the claims made for the preparation were:

"For Kidney Complaints and diseases arising from disorders of the Kidneys and Bladder such as Backache, Stiff, Lame or Weak Back, Cold in the Back or Kidneys, Congestion of the Kidneys, Inflammation of the Bladder, Gravel, Scalding Urine, and Urinary Troubles."

These and similar claims were declared false and fraudulent, and in January, 1924, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 12075; issued July 10, 1924.*]

Glicofostina.—Henry S. Wampole Co. of Baltimore, shipped between May and October, 1923, from Baltimore to Porto Rico a quantity of "Glicofostina" which was misbranded. When analyzed by the Bureau of Chemistry the product was reported to consist essentially of strychnin sulphate, sodium, calcium and potassium glycerophosphates, alcohol and water. Some of the claims made on or in the trade packages for this product were:

"For the Nerves . . . Indicated in Neurasthenia, Nervous Exhaustion, Nervous Debility, Fatigue, General Decay, Insomnia, Hysteria, Excitability and in all depressive conditions of the nervous system."

The stuff was also recommended for overwork, insufficient sleep, any kind of excesses, neuralgia, sexual impotence, insomnia and various other conditions. These claims were declared by the government to be false and fraudulent, and in November, 1923, the Henry S. Wampole Co. admitted the allegations, and judgment of condemnation and forfeiture was entered. The product was released to the company on the execution of a bond of $800, presumably contingent upon a relabeling of the product so as to omit the fraudulent claims.—[*Notice of Judgment No. 12089; issued July 10, 1924.*]

Correspondence

"MEDICAL LICENSE INVESTIGATION IN CALIFORNIA"

To the Editor:—We hasten to correct the erroneous impression that may be created by the editorial comment entitled "Medical License Investigation in California" (THE JOURNAL, July 19), in which it was stated that, "according to present reports, . . . graduates of all medical schools in Missouri are to be debarred from licensure in California," whereas the facts are that graduates of the St. Louis University School of Medicine, the University of Missouri School of Medicine and the Washington University Medical School fulfilling the requirements of the California law will be accepted to a written examination in this state.

However, graduates of the Kansas City College of Physicians and Surgeons, the Kansas City University of Physicians and Surgeons and the St. Louis College of Physicians and Surgeons will *not* be admitted to written examination in California.

Referring to the action of the California board, the further comment was made that "the reports criticize the Missouri board for recognizing credentials of the low grade medical schools in Missouri, a blame that is not deserved, since

graduates of these schools were refused recognition by that board until 1921."

By reading the enclosed copy of the resolution adopted by the Board of Medical Examiners of the State of California, it will be noted that the criticism referred to arose in connection with the case of Eugene J. Rinaldo, M.D., who, according to the evidence submitted, was accepted for examination by the Missouri board in 1920, on a spurious diploma from the St. Louis College of Physicians and Surgeons, bearing a 1908 date.

The evidence further showed that no one in the class of 1908 (and we have communicated with about thirty-eight of the class), ever knew Eugene J. Rinaldo, M.D.; that his name did not appear in the class records; that, according to his sworn statement before the California board at the February meeting, Eugene J. Rinaldo, M.D., conducted a conservatory of music and military school in Missouri in 1912, 1913, 1914 and 1915, whereas the affidavit of Eugene J. Rinaldo, M.D., presented to the St. Louis College of Physicians and Surgeons at the time he entered in 1918, gave as the prior medical training of Eugene J. Rinaldo, M.D., three years in the Pacific Medical College of Los Angeles, coincident with his residence in Missouri; that the evidence introduced showed that Eugene J. Rinaldo, M.D., had presented to the Missouri board fraudulent preliminary and premedical education certificates bearing the signature of W. P. Sachs, who made affidavit (which was also introduced in evidence); that the certificate for premedical and preliminary education was sold by Sachs to Robert Adcox, and that W. P. Sachs had never seen Eugene J. Rinaldo, M.D.

We have been informed by the Missouri board that Eugene J. Rinaldo, M.D., "was given a special examination in the office of Secretary, July 7th and 8th" (1920).

In view of these circumstances, and in view of the entire transaction having occurred in the state of Missouri, the California board felt that the authorities in Missouri were in a better position to uncover irregularities of this nature than is the California board, situated some 2,500 miles away, although we believe that we have successfully done so.

We quite agree with the last three lines of the editorial comment, stating that investigation and action should "mercilessly expose those who by irregularly securing diplomas or licenses have obtained state authority to prey on the sick."

C. B. PINKHAM, M.D., San Francisco.
Secretary-Treasurer, Board of Medical
Examiners, State of California

DOSAGE OF MERCUROCHROME-220 SOLUBLE

To the Editor:—Bunten (THE JOURNAL, May 3) and Whitman (THE JOURNAL, June 14) reported salivation following the use of mercurochrome-220 soluble intravenously, and Guy (THE JOURNAL, June 28) reported stomatitis following its prolonged injection into a tuberculous sinus. Since these reports may cause many to hesitate to use this valuable drug when indicated, I wish to call attention to the fact that salivation occurred in most cases only after prolonged use of the drug in fairly large doses. Guy, for example, injected 15 c.c. of 1 per cent. solution into a tuberculous sinus for nineteen days (a total of 2.85 gm.) before salivation occurred.

It has been my experience that smaller doses than those suggested by Young and Hill (THE JOURNAL, March 1) are often effective. In a series of three cases of epidemic encephalitis, two of which have been reported elsewhere (*Northwest Medicine*, June, 1924) very prompt recovery followed small doses of mercurochrome. In one case, only 10 c.c. of 1 per cent. solution (1.5 mg. per kilogram) was given, while in the other two cases two injections of 10 c.c. each were used at twenty-four hour intervals. Improvement had begun before the second injection in both cases, so that the second 10 c.c. may have been unnecessary. No febrile reaction or salivation occurred in this series of cases.

I believe that, in the intravenous administration of mercurochrome, small doses should be given first in all but the most desperate cases. If not effective, larger doses should be tried in spite of the risk of salivation.

JOHN W. VISHER, M.D., Twin Falls, Idaho.

USE OF CHLORIN IN RESPIRATORY INFECTIONS IN 1833

To the Editor:—In the *American Journal of the Medical Sciences* (**15**:243, 1834) is the following note: "The *Transactions médicales* for February, 1833, contains an interesting article on this subject by Dr. Bourgeois. The physician having seen two apparently desperate phthisical patients relieved, without being submitted to any medical treatment, but who resided at a bleaching establishment near St. Denis, the atmosphere of which is impregnated with chlorin, was induced to form a similar atmosphere in the chambers of some young phthisical patients in the Royal School at St. Denis. This medication, though it did not cure these patients, ameliorated their condition, diminished their dyspnea, promoted sleep, gave them appetite, and destroyed the fetor of their sputa."

AUSTIN O'MALLEY, M.D., Philadelphia.

"THE COMMERCIAL TAINT IN MEDICAL ADVERTISING"

To the Editor:—Your editorial comment, July 5, on this subject is pertinent. As you rightly state, no decent man in the medical profession will think of adding to his armamentarium merely for financial gain, and some manufacturers of physical therapeutic apparatus are making a gross mistake in their advertisements by stressing the commercial gains to be derived from the use of their apparatus. In my recent paper (THE JOURNAL, July 12, p. 99) I wrote: "It is an unfortunate fact that nowadays chiropractors and physical cultists are very good buyers of electrotherapy apparatus, although it would seem that some restraint could be put on manufacturers' advertising and selling through medical publications."

This brings up the question of censoring the advertising literature of these manufacturers. The Council on Pharmacy and Chemistry is doing splendid work in checking up claims of the drug manufacturers as to the composition and therapeutic action of their products. No unwarranted statements can appear in the advertising columns of THE JOURNAL or in any other publication. It seems, however, that no such control is exercised regarding the advertising literature or even the advertisements in medical periodicals of the manufacturers of various physical therapeutic apparatus. Considering the fact that physical therapeutics is finally finding its proper place as an adjunct to recognized medical and surgical treatment, would it not be desirable to have either a "Council on Physics" or a Committee on Physical Therapeutics go over the merits of the various physical therapeutic apparatus the same way that the Council on Pharmacy and Chemistry does?

The American Electrotherapeutic Association has a committee on standardization of physical therapeutic apparatus whose duty is to examine into the capacity of the various apparatus and to report at the annual meeting of the association without giving any certificate or public endorsement to any manufacturer. This committee is urging that manufacturers submit their apparatus to the U. S. Bureau of Standards, which will check up the physics of each apparatus for a small fee.

A committee of the American Medical Association as suggested above will prevent manufacturers from running wild

in their advertising statements; by threatening nonadmission to the various exhibits and to the advertising spaces of THE JOURNAL in case of proved sales to nonmedical persons or quacks, it ought to be able to reduce such sales to a minimum. Some action of this sort, and the thorough education of the medical profession in the proper use of physical therapeutics, are imperative to counteract the present tendency on the part of half-trained lay people to form the newest cult, the "physiotherapeutic" one.

RICHARD KOVACS, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ELECTROCOAGULATION OF TONSIL

To the Editor:—I would like some information on the status of the electrocoagulation method of tonsil removal. Is this method a success? I mean the slow method, in which about twenty applications are used. If this is a success and practical for a man in general practice, I should like to get some experience in it. M.D., Wis.

ANSWER.—The consensus of the reports seems to indicate that this method is not very satisfactory. In some instances, large areas were destroyed in one sitting, with considerable sloughing; at times, marked bleeding ensued. The method requires a great deal of time for sufficient visits on the part of the patient, which is unsatisfactory to many of them. There is, furthermore, great difficulty in reaching and destroying all portions of the tonsils. In case a small remnant is left, if it has a crypt in it, the latter may become infected and cause almost as much difficulty as if the whole tonsil were in situ. As a general proposition, complete removal of the tonsil by one of the recognized operative procedures is preferable to the attempted destruction by the electrocoagulation method. When there is a serious contraindication to operations, such as high blood pressure, arteriosclerosis and diabetes, and when at the same time the tonsils require serious attention, the electrocoagulation method might be tried in order to avoid the possible serious effect of an operation. The method has not thus far found great favor or widespread use.

REMOVAL OF CYSTIC HYGROMA

To the Editor:—One month ago, I operated on a boy, aged 4 years, with a cystic hygroma of the neck. I found an ill-defined multilocular tumor extending down below the clavicle and surrounding the carotid sheath. After dissecting out all accessible tumor tissue, I closed with small gauze drainage. Now, one month later, the tumor is recurring and cystic fluid can be aspirated in small quantity from various parts of the mass. I would appreciate any information regarding a more successful method of handling this case. M.D., Neb.

ANSWER.—The only way to secure a definite and permanent cure of hygroma is to make a complete dissection and remove all the membrane. Evidently this has not been done. If further operation is not to be considered, it might be that radium would have some effect on the tissue remaining. Radium has been tried in some of the cases, but apparently not with any great amount of success.

DEXTRINIZED FLOUR

To the Editor:—In looking through Hess' "Infant Feeding," published by the American Medical Association, I notice several references to "dextrinized flour." I would be much obliged if you would let me know what this means. Is it the ordinary white flour as we purchase it from the mills, or is it flour that has been subjected to some process whereby it is partially converted into sugar?

A. F. MCKENZIE, M.D., Alliston, Ont.

ANSWER.—Dextrinized flour refers to flour in which the starch has been dextrinized in whole or in large part. Flour ball, Robinson's patent barley flour, Imperial Granum and Cerena are examples. Flour ball may be prepared as follows: Two pounds of wheat flour is tied in a cheese cloth bag and boiled in 2 quarts of water for five hours. The bag is removed and the contents baked in a slow oven till brown, about three hours. The brown crust is removed and discarded. The remainder is powdered before using.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 2. Sec., Dr. Harry C. DeVighne, Juneau.
MASSACHUSETTS: Boston, Sept. 9-11. Sec., Dr. Charles E. Prior, 144 State House, Boston.
NATIONAL BOARD OF MEDICAL EXAMINERS: Written examinations in Class A Medical Schools. Parts I and II, September 17-19. All applications for these examinations must be made on or before August 15. Sec., Dr. John S. Rodman, 1310 Medical Arts Bldg., Philadelphia.
NEW HAMPSHIRE: Concord, Sept. 11-12. Sec., Dr. Charles Duncan, Concord.
PORTO RICO: San Juan, Sept. 2. Sec., Dr. D. Biascoechea, San Juan.

EXPERIENCES OF A HOSPITAL INTERN

EMIL BOGEN, M.D.
LOS ANGELES

In connection with the recent discussions of the relationship of the fifth, or intern, year to the medical curriculum, it may be of some value to record the actual experience of an intern at one of the largest hospitals in America. I will therefore present a condensed account of my experience during the last year, as an intern in the Los Angeles General Hospital, together with some of the more interesting observations that I have been enabled to make.

The intern at this hospital has complete responsibility for the entire examination and treatment of every patient under his care, but receives aid, advice and supervision from the resident and attending staff. He sees every patient within an hour after admission; takes the history; makes a physical examination; does a urinalysis and such other diagnostic procedures as may be indicated; makes a diagnosis; prescribes such treatment as he deems desirable, and thereafter sees each patient at least once daily.

My first assignment, July 1 to August 15, was in the psychopathic service. Here I had 159 patients during the six weeks, with four deaths. Among the unexpected phenomena noted in this ward were the high percentage of indicanuria among the patients on admission, the frequency of drug addiction, especially to the newer barbituric acid compounds, among the women, and the frequent complaint of disordered consciousness or nightmares the day after a patient had been quieted by injections of scopolamin.

August 15 to October 1, in the contagious wards, I had 135 patients, with eleven deaths during that period. Of these patients, fifty-seven had positive cultures for diphtheria, twenty-eight had scarlet fever, and twelve had infantile paralysis. All the patients with scarlet fever were given Schick tests. Eight of them gave positive reactions, and two of these later developed clinical diphtheria. As intern, I performed eight intubations and 12 tonsillectomies, and assisted with two tracheotomies and one mastoidectomy on this service.

October 1 to November 15, I had fifty patients in the general medical wards and twenty-nine patients in the typhoid fever ward, with nine deaths during this time. I performed Widal's hemoclastic crisis test on each patient with typhoid fever, with positive results in about 80 per cent. of the cases. The medical cases included ten patients with carcinoma, five with acute salpingitis, four with renal disease, four with heart disease, three with eye diseases, three with acute arthritis, three with syphilis and two with cholelithiasis. Five of these patients gave markedly positive von Pirquet tests, including two with tuberculosis of the kidney and two with pulmonary symptoms.

November 15 to January 1, I had 104 infants on the pediatric service, with eight deaths. When I came to this service they had been trying the Czerny-Kleinschmidt butter flour mixture for malnourished infants. Most of these were changed to

Marriott's lactic acid milk and Karo feeding with remarkable improvement. A few were given S. M. A. with satisfactory results, and another group was found to get along well on the ordinary milk, water and dextri-maltose formulas.

January 1 to February 15, I had forty-two patients in the gynecologic service, fifty-one children in the orthopedic service, and twelve cases in the general surgical service, without a death. In removing stitches following operations, I found that, in addition to the suggestions recently made to cut sutures the day before they were removed, and to have the patient breathe deeply when abdominal sutures were being removed, much less pain was produced if the wound was first freely covered with hydrogen peroxid to soften the encrusted suture.

February 15 to April 1, I again had a medical service, with sixty-seven patients, six of whom died during the six weeks. Among these patients were twelve patients with acute arthritis, and these took sodium salicylate up to 200 grains (13 gm.) a day, with only one patient developing symptoms of salicylism, and with notable improvement in most cases. In this service, hypodermic injections of 2 c.c. of 50 per cent. magnesium sulphate solution were used in quite a number of cases as an anodyne and sedative in place of morphin, with surprising success. March 1 to March 15, I had an opportunity, as acting resident anesthetist, to supervise 135 anesthesias, including seventy by ether, forty-five by nitrous oxid gas and oxygen, and twenty spinal anesthesias, without any fatalities.

April 1 to May 15, in the obstetric service, I delivered seventy-five babies and assisted in the care of 282 women, with a mortality of four mothers and eight babies. Coagulation time was determined for each infant within a few days after birth, but in no case was the clotting delayed over nine minutes. Circumcisions were performed on fourteen infants, an animal board being used to hold the infant, and thus dispensing with the need for an assistant. An attempt was made to evaluate the use of supplementary feeding during the first four days, before the mother's milk supply becomes well established, using formulas with Eagle Brand condensed milk and with S. M. A., but without marked change, as shown by daily weighing of the infants. Of 100 women in labor, thirty-one admitted intercourse within the last week before confinement, and twenty-nine others within the last month, but no relationship could be shown between this and the subsequent course of labor or the puerperium. Several of the patients asserted that they had faithfully used various chemical and mechanical contraceptives, often at the advice of their physician, evidently without avail. A study of the urine of 220 women, taken, whenever possible, just before delivery, showed thirty cases of acetonuria, among eighty-seven cases in which there was acid urine. It was found that, in almost every case, the presence of acetone in the urine was associated with some definite pathologic condition of the mother, such as eclampsia, toxemia without convulsions, and pernicious vomiting, and that in only two cases of these pathologic conditions was no acetonuria found.

May 15 to July 1, in the laboratory service, I had no individual patients. There were two or three necropsies a day, and pathologic sections of from six to twelve specimens secured from operations.

It may thus be seen that, during the last year, my internship has given me an opportunity to watch and care for more than a thousand patients with various conditions at this hospital, with fifty deaths, and presumably this is the average experience in this institution. With so many patients to look after, it has been, of course, impossible to conduct any very extensive studies among them; but it is hoped that these observations may suggest the vast potentialities of a medical internship for interesting and, indeed, valuable contributions on the part of the observant physician, and may stimulate others to feel that the years devoted to hospital residence are not simply so much time wasted before entering on the independent practice of medicine.

Colorado April Examination

Dr. David A. Strickler, secretary, Colorado Board of Medical Examiners, reports the written examination held at Denver, April 2-5, 1924. The examination covered eight subjects and included eighty questions. An average of 75 per cent. was required to pass. Of the eight candidates who took the physicians' and surgeons' examination, four, including one osteopath, passed, and four, including one osteopath, failed. Eight candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Kentucky School of Medicine		(1900)	75
Kansas City University of Physicians and Surgeons		(1924)	75
University of Heidelberg, Germany		(1920)*	79.3
Osteopath			76.3

College	FAILED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Los Angeles		(1917)*	58.5
St. Louis College of Physicians and Surgeons		(1923, 2)	43, 47.4
Osteopath			70.1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Southern California		(1903)	California
Rush Medical College		(1922)	Illinois
Indiana University School of Medicine		(1918)	Indiana
Keokuk Medical College		(1904)	Iowa
State University of Iowa College of Medicine		(1920)	Iowa
Kansas Medical College		(1908)	Illinois
University of Maryland		(1915)	Maryland
University of Oklahoma		(1918)	Oklahoma

* Graduation not verified.

Maine March Examination

Dr. Adam P. Leighton, Jr., secretary, Maine Board of Registration of Medicine, reports the written examination held at Portland, March 11-12, 1924. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Fourteen candidates were examined and passed. One candidate was licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Yale University		(1923)	84
Baltimore Medical College		(1896)	75.2
Harvard University		(1922)	91.5
Tufts College Medical School		(1922)	82.5
Jefferson Medical College		(1914)	77
Woman's Med. Coll. of Pennsylvania		(1902) 85, (1922, 3) 83,	87.9, 90
McGill University Faculty of Medicine		(1923)	82
University of Montreal Medical Faculty		(1923)	78
University of London, England		(1918)	84.6
University of Bonn, Germany		(1921)*	79
University of Konigsberg, Germany		(1910)*	81

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Johns Hopkins University		(1904)	Maryland

* Graduation not verified.

Nevada May Examination

Dr. Simeon L. Lee, secretary, Nevada Board of Medical Examiners, reports the written examination held at Carson City, May 5-7, 1924. The examination covered 13 subjects and included 100 questions. An average of 75 per cent. was required to pass. Three candidates were examined, all of whom passed. Seven candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Kansas City University of Physicians and Surgeons		(1922)	76.4
St. Louis College of Physicians and Surgeons		(1920)	80.7
Osaka Prefecture Higher Medical School, Japan		(1914)*	77.8

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine		(1908)	Idaho
Howard University		(1891)	Idaho
American Medical Missionary College		(1903)	California
Kansas City Coll. of Medicine and Surgery		(1920) (1922)	Arkansas
Creighton Medical College		(1909)	Idaho
Gate City Medical College		(1903)*	Oklahoma

* Graduation not verified.

Book Notices

INSULIN ZUR EINFÜHRUNG IN DIE INSULINTHERAPIE DES DIABETES MELLITUS. Von H. Staub, 1. Assistent der Medizinischen Klinik Basel. Paper. Price, 60 cents. Pp. 106, with 5 illustrations. Berlin, Julius Springer, 1924.

INSULIN IN GENERAL PRACTICE. A Concise Clinical Guide For Practitioners. By A. Clarke Begg, O.B.E., M.D., Ch.B. Cloth. Price, 5 shillings net. Pp. 130, with 4 illustrations. London: William Heinemann, 1924.

MANAGEMENT OF DIABETES. Treatment by Dietary Regulation and the Use of Insulin. A Manual for Physicians and Nurses Based on the Course of Instruction Given at the Presbyterian Hospital, New York. By George A. Harrop, Jr., M.D., Associate in Medicine, College of Physicians and Surgeons, Columbia University. Introduction by Walter W. Palmer, M.D., Bard Professor of Medicine, College of Physicians and Surgeons, Columbia University. Cloth. Price, $2 net. Pp. 176. New York: Paul B. Hoeber, 1924.

Although barely two years have elapsed since Banting announced his discovery, scientific and popular interest in insulin has been aroused to such an extent that already literally hundreds of scientific articles have appeared in print. That this flood of scientific production would soon be followed by popular books on the subject was to be expected, although one cannot help wondering whether the time is yet ripe for such popularization of a still difficult subject. Staub has collected in a concise, interesting manner all the available reports; this is preceded by a historical sketch of the development of insulin, which loses none of the romance because of the scientific precision of the story.

The books by Harrop and by Begg are primarily manuals on the treatment of diabetes since the advent of insulin. They are essentially the same, both aiming to teach the general practitioner, and both seeming almost too sketchy for the busy man who has not sufficient time or sufficient urge to study the subject more thoroughly. Diabetes probably offers more problems in therapy than any other disease in internal medicine; why, then, expect expert treatment except by those specially trained? These books should arouse interest; Harrop's is especially practical because of the comparatively large amount of space devoted to recipes and tables of food values. In Begg's book we note at least one statement that cannot pass unchallenged: "The appearance of acetone in the urine along with sugar would appear to exclude a diagnosis of renal glycosuria" (p. 16). Both books wisely refrain from torturing the busy man with many of the mathematical intricacies which have been so helpful in developing the subject, but which, like the electrocardiograph, may confuse more than clarify the mind of the average physician. On the whole, both books give a good, though somewhat superficial, exposition of the subject.

THE STRUCTURE OF THE ATOM. By E. N. da C. Andrade, D.Sc., Ph.D., Fellow of University College, London. Cloth. Price, $6. Pp. 314, with illustrations. New York: Harcourt Brace & Co.

The author states in his preface that in this book he has attempted to give in a form sufficiently simple to make it accessible to all serious students of the exact sciences a critical account of the work that has been done on the subject of atomic structure. The book is divided into two parts, the first dealing with the nucleus and the second with the extranuclear structure. While most of the book is too technical for the average reader, the author's ability to clarify the many abstruse problems connected with the study of the modern conception of the physical constitution of matter makes the work a valuable one.

FUNDAMENTALS OF BIO-CHEMISTRY IN RELATION TO HUMAN PHYSIOLOGY. By T. R. Parsons, B.Sc., M.A., Demonstrator in Physiology in the University of Cambridge. Cloth. Price, $3. Pp. 281. Baltimore: Williams & Wilkins Company, 1923.

This book is written principally for the student. It is a concise, general survey of the subject, but it has been abridged rather too much for general use as a reference work by any except readers new to the study. Nevertheless, its treatment is sufficiently comprehensive to be of service to the physician who wishes to review his biochemistry briefly and to become familiar in a general way with the later discoveries. The discussions on vitamins, colloids, enzymes and the functional importance of electrolytes are of particular interest to the practitioner. There are few if any books on biochemistry in which are condensed so many of the fundamental facts of the subject without unnecessary detail as this. Hence, it should prove useful to teachers. Although printed in 1923, the text was prepared too early to make any reference to insulin. Another minor fault is the use of the term "adrenalin" throughout instead of the more justifiable name, epinephrin.

PREVENTION OF DENTAL CARIES AND ORAL SEPSIS. By H. P. Pickerill, C.B.E., M.D., Professor of Dentistry and Dean of the Dental School in the University of Otago. Third edition. Cloth. Price, $6. Pp. 340, with 80 illustrations. New York: Paul B. Hoeber, 1924.

This will interest both the dentist and the physician, but will be read more by the research man than by the average practitioner. The book is largely theoretical, but the theories are fairly well supported by experiments, which seem to verify some of the theories. The chapter dealing with the futile attempts of preventing or controlling tooth decay by the use of antiseptic mouth washes and tooth pastes is convincing; so also is the author's condemnation of large tooth brushes. One cannot agree with him in the statement that "the mouth should be held wide open" when one is brushing the teeth. When the mouth is held wide open, there is insufficient room between the buccal sides of the upper molars and the cheek for even a small brush; especially is this true of the second and third molars. The author most properly favors oral prophylactic work for young children. Many false theories are introduced and then demolished. The inoculation of the mouth with "other organisms" to prevent decay of the teeth is interesting, but it seems doubtful that this method will be generally accepted and employed.

STUDIES ON SCHISTOSOMIASIS JAPONICA. By Ernest Carroll Faust, Ph.D., Associate Professor of Parasitology, Peking Union Medical College, and Henry Edmund Meleny, M.D., Associate in Medicine, Peking Union Medical College. With a Supplement on the Molluscan Hosts of the Human Blood Fluke in China and Japan, and Species Liable to be Confused with Them. By Nelson Annandale, D.Sc., Director, Zoological Survey of India. American Journal of Hygiene, Monographic Series, No. 3. Paper. Price, $5. Pp. 339, with 61 illustrations. Baltimore: American Journal of Hygiene, 1924.

This is a striking illustration of the results that may be attained by the cooperation of workers thoroughly at home in different fields, and attacking a joint problem with the knowledge gained by extended and successful research each in his own territory. On the important subject of Japanese schistosomiasis there has appeared in the past a long series of individual publications which are listed chronologically in the bibliographic section. Despite the amount of information gained by individual workers, there still existed much doubt on certain points, as well as very distinct and important gaps in the knowledge of the subject. This monograph presents a complete and well organized picture of the subject. Starting out with the historical problem, the authors have given us material generally unknown because of its original appearance in Japanese literature. They have then included the results of their own study, with particular reference to the disease as it exists in China. The morphology, the biology and the life history of the causal organism, the Japanese blood fluke, are presented in detail. A chapter is devoted to the discussion of the migration route followed by the fluke in the mammalian host. On the basis of their investigations, the authors believe that the young forms, after entering the body through the skin, pass to the lungs, and from the lungs to the liver, by way of the pulmonary veins, the systemic circulation, and the mesenteric and portal veins. Careful attention has been given to a study of the habits and relationship of the snails that serve as intermediate hosts in China. In Soochow and the surrounding territory, this intermediate host is *Oncomelania hupensis;* in the Shaohsing territory, it is *Katayama nosophora.* The latter species, which occurs also in South China, has not yet become infected there, and consequently the disease is not established in that territory. The main infected region is the Yangtze basin, although nine out of thirteen Chinese provinces have some

infected territory. While this area is much greater than the region infected in Japan, much of it, in the view of the authors, is subject to only light infection. The therapy of the disease is discussed in connection with clinical and laboratory findings, and intensive treatment with antimony preparations is recommended. The authors do not consider the eradication of the snails as advocated in Japan a practical measure. They recommend control of fecal disposal and protection for the skin by workers in rice fields. A supplement by Dr. Nelson Annandale, late director of the Zoological Survey of India, deals with the molluscan intermediate hosts and species likely to be confused with them. There is involved an intricate question dealing with systematic malacology, and the findings of this distinguished worker in that field are of the greatest importance. He inclines to recognize as a subgenus *Katayama*, justifying thus the name *Katayama nosophora*, already somewhat generally introduced in the medical literature. He reaches the positive conclusion that the genus *Blanfordia* has not been shown to be incriminated in the spread of the disease. In a few minor features the work is a little difficult to use. The plates are numbered successively, but the figures are not. Consequently, in the first part one finds Figures 1 to 61 on the first six plates, and new figures numbered 1 to 52 on Plates 7 to 12. Similar new sets of numbers occur in later parts of the work. While this may have been necessarily involved in the mechanical reproduction of the illustrations, it is unfortunate because of the confusion introduced and the awkward complexity of cross references. The bibliography has been arranged historically. While such an arrangement is useful in text discussions, one does not readily see the advantages in a printed list of titles, and there are evident disadvantages in the difficulty in following the work of the individual authors.

MATERNITY NURSING IN A NUTSHELL. By Elizabeth H. Wickham, R.N. Cloth. Price, $1.50. Pp. 167, with 28 illustrations. Philadelphia: F. A. Davis Company, 1924.

The author of this brochure is evidently widely experienced and without doubt a most excellent head nurse; at the same time, there are errors that could have been averted easily by reference to authority. For instance, it is not true that the entire egg must be expelled intact in order to constitute a complete abortion, and premature is the term applied to labors occurring after the seventh month and not the sixth. Errors of clarity and proofreading can be forgiven easily in a first printing, but the flagrant advertising of supply houses is inexcusable. Since the book is intended for the instruction of nurses, it is natural and right that the intentions and duties of the attending physician should be clearly interpreted; but it also would seem desirable to devote more space to the concurrent and subsidiary duties of the nurse.

VORLESUNGEN ÜBER ALLGEMEINE KONSTITUTIONS- UND VERERBUNGSLEHRE FÜR STUDIERENDE UND AERZTE. Von Dr. Julius Bauer, Privatdozent für innere Medizin an der Universität Wien. Second edition. Paper. Price, $1.60. Pp. 218, with 56 illustrations. Berlin: Julius Springer, 1923.

This group of twelve lectures deals with a study of the inheritance of constitutional abnormalities and diseases. The first six lectures are devoted to a review of the principles of inheritance in plant and animal life and are of interest chiefly to the student of genetics. The remaining lectures apply these principles to the inheritance of disease in man. An abundance of practical information is made available here for the practicing physician in one of the new fields of medical science and by one of its foremost European investigators.

TUBERCULOSIS OF THE LARYNX: TEN YEARS' EXPERIENCE IN A SANATORIUM. Medical Research Council, Special Report Series, No. 83. By Sir St. Clair Thompson, M.D., F.R.C.P., F.R.C.S. Paper. Price, 2 shillings, 6 pence net. Pp. 91, with illustrations. London: His Majesty's Stationery Office, 1924.

This is a summary of the results observed in sanatorium work covering a period of ten years. It covers all phases of laryngeal tuberculosis. Innumerable and valuable suggestions are offered by the author, and his great experience qualifies him to speak with the highest authority.

Medicolegal

Employer Liable for His Physician's Malpractice

(Ashby v. Davis Coal & Coke Co. (W. Va.), 121 S. E. R. 174)

The Supreme Court of Appeals of West Virginia says that this action was not for compensation for the injuries received by the plaintiff while working in the defendant's mine, but for damages resulting from the alleged negligence of the defendant in employing an incompetent physician to treat him, under a contract or an arrangement between the defendant and its employees, by virtue of which a fee was deducted from his wages, for medical services to be rendered him in case of injury or illness. The defendant was a subscriber to the workmen's compensation fund and had complied with the law in relation thereto, wherefore it contended that it was relieved from liability for damages by the provision of the workmen's compensation act of West Virginia that any employer subject to this act who shall elect to pay into the workmen's compensation fund the premiums provided by this act shall not be liable to respond in damage at common law or by statute for the injury or death of any employe however occurring. But this court is of the opinion that the plaintiff was entitled to maintain such an action as this one was, independently of his rights under the workmen's compensation law, and that the ruling of the circuit court sustaining a demurrer to the plaintiff's declaration should be reversed and the demurrer overruled. In other words, the court holds that where an employer, though he has subscribed to the workmen's compensation fund and has complied with the law in relation thereto, agrees with an employee, in consideration of deductions from the latter's wages, to furnish the employee competent and skilled medical treatment for illness or injuries suffered while in his service, he is bound to maintain for that purpose a competent and skilled physician, notwithstanding the provision of the workmen's compensation law quoted above. Where the employer neglects to perform the duties so imposed and by reason of such neglect the employee is injured, such employer is liable in damages to the employee to the same extent that the physician himself would be, were he sued for the injury.

"Total Disability"—Danger from Pus Infection

(Travelers' Ins. Co. v. Plaster (Ala.), 98 So. R. 909)

The Supreme Court of Alabama, in affirming a judgment in favor of plaintiff Plaster on a policy of insurance, the insured being a traveling salesman, says that on the night of July 18, 1922, the insured sustained an injury to one of his feet by a piece of steel broken from a bath tub, the wound being about one-half inch in length and one-eighth inch wide, some of the flesh being "gouged out from under the ball of his foot just back of the little toe." The next morning he limped and complained of pain. July 21, he went to his physician for treatment. He was then trying to walk on his heel. There was pus in the wound. The physician advised him that it was not safe for him to continue his work as a traveling salesman, but he continued to travel four or five days a week, returning each week for treatment, until September 29. December 27, he died from the effects of blood poison. The defendant insurance company contended that, since by the policy it was made a condition of recovery as for death that the insured should be wholly and continuously disabled "from the date of accident," the plaintiff should not have been allowed to recover because there was no evidence of the insured's total disability during the period between the accident and the time of his first consultation with his physician, who then advised him to quit work. But reference to the facts and to the rule of construction established by the authorities should suffice to refute that contention.

The term "total disability" is a relative term, depending in a measure on the character of the occupation and the capabilities of the insured, and to a large extent on the circumstances of the particular case. Ordinarily it is a question of fact, and not of law. Where the policy insures against acci-

dental injuries wholly and continuously disabling the insured from transacting any and every kind of business pertaining to his occupation, to constitute total disability it is not necessary that an injury should render the insured physically unable to transact any kind of business pertaining to his occupation, but it is sufficient if the injury is such that common care and prudence require him to desist from transacting such business in order to effect a cure. This is a duty which he owes to the insurer as well as to himself.

The danger from pus infection or blood poison is a matter of common knowledge among people of intelligence and education. The event in this case went to prove, and the jury was by the evidence authorized to infer, that from the date of the accident the insured should have been under the care of his physician and that the location of his wound made it peculiarly dangerous for him to go about the duties of his occupation, which kept him away from home and on his feet much of the time. It is this court's judgment that the issue as to the extent of the disability suffered by the insured—whether it brought the plaintiff's case within the purview of the policy—was properly submitted to the jury, and that error could not be predicated of the trial court's action in overruling the defendant's motion for a new trial.

Action for Alleged Burning with Radium

(Furgason v. Bellaire (Iowa), 197 N. W. R. 13)

The Supreme Court of Iowa, in affirming a judgment on a verdict directed for the defendant, says that the plaintiff, aged 62, was, about 1918, scratched on her underlip near the corner of her mouth, by a grandchild, in play. When the injury healed, it left a lump about the size of a small pea. In June, 1920, the lump began to grow, and when it was about the size of a bean, the plaintiff went to the defendant, who told her that she had a cancer. He gave her treatments with radium, applied by means of a tongue depressor, or paddle, to which the radium was fastened by adhesive tape. The depressor was placed in her mouth over the lump, she reclining, with a towel under the end of the depressor. He gave her three such treatments in the latter part of June or the first part of July, 1920, on three successive days, the treatment lasting from 8:30 in the morning until noon, and from 1 to 4:30 each day. The plaintiff did not claim to have felt any burning in these treatments, but they were followed by swelling and soreness. She had three subsequent radium treatments by the defendant—a light treatment in September, 1920, and two twenty-minute treatments in January, 1921, about a week before she went to Missouri, Jan. 18, 1921. She thought she felt the radium burn at the treatments in September and January, at which time her mouth was sore and swollen, and the place was raw. About this time there were some white spots in her mouth, which a physician in Missouri said resembled leukoplakia, and for which the defendant had talked of using an electric needle. On her arrival in Missouri, mouth washes and warm applications were used, and about a week later the physician there applied his treatment, caustic, one application, and a few days afterward the cancer came out. Some weeks later, adhesions were loosened. Her tongue is now grown to the floor of her mouth, and some of the cheek is missing. The adhesions and disfigurement followed the treatment with caustic after she went to Missouri.

It was contended by the defendant that there was no showing that he was negligent, and that it is necessary in cases of this character to show that the defendant failed to exercise the knowledge and care usually and ordinarily exercised by practitioners in the same or similar localities. This is the rule. It was argued that there was no testimony in this case from any source indicating that the defendant failed to observe the usual and ordinary practice of his profession in administering the applications of radium or in the treatment accorded the plaintiff after such application; and the supreme court thinks this was the fact, the court failing to find any evidence in the record to sustain the burden imposed on the plaintiff in this regard. Furthermore, considering all the evidence, the court thinks that there was force in the contention that the plaintiff's afflictions subsequent to the inflammation and swelling in her cheek for the treatment of which she went to the physician in Missouri were all due to the treatment she received at the hands of that physician.

It was contended that this action, begun Dec. 16, 1922, was barred by the two years' statute of limitations of Iowa, and the supreme court is inclined to the view, adopted by the trial court, that the injuries of which the plaintiff complained, so far as they related to anything done by the defendant, were done not later than September, 1920, and that her cause of action accrued when the original burnings were done.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Oto-Laryngology, Montreal, Canada, Sept. 15-20. Dr. Luther C. Peter, 1529 Spruce Street, Philadelphia, Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Cleveland, Sept. 18-20. Dr. James E. Davis, 111 Josephine Avenue, Detroit, Secretary.

American Electrotherapeutic Association, New York, Sept. 9-12. Dr. Richard Kovacs, 223 E. 68th Street, New York, Secretary.

Indiana State Medical Association, Indianapolis, Sept. 24-26. Dr. Charles N. Combs, 221 South 6th Street, Terre Haute, Secretary.

Kentucky State Medical Association, Louisville, Sept. 23-25. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Missouri Valley, Medical Society of the, Des Moines, Sept. 17-19. Dr. Charles W. Fassett, 115 E. 31st Street, Kansas City, Mo., Secretary.

North Dakota State Medical Association, Bismarck, Sept. 10-11. Dr. H. J. Rowe, 5211 Upton Avenue, S., Minneapolis, Minn., Secretary.

Wisconsin, State Medical Society of, Green Bay, Aug. 20-22. Mr. J. G. Crownhart, 588 Jefferson Street, Milwaukee, Executive Secretary.

AMERICAN PEDIATRIC SOCIETY

Thirty-Sixth Annual Meeting, held in Pittsfield, Mass., June 5-7, 1924

(Concluded from page 300)

Action of Acid-Producing Substances in Nephritis

DRS. KENNETH D. BLACKFAN and BENGT HAMILTON, Boston: We have found that ammonium chlorid and amonium sulphate have as definite a diuretic action as magnesium sulphate and calcium chlorid. Coincident with the action of these four salts, there has occurred a diminution in the edema, a loss in weight and a fall in blood pressure. Parallel with these changes are found a lowering of the bicarbonate and an increase in the hydrogen-ion concentration of the blood.

Effect of Acid-Producing Salts on Fixed Base Excretion in Urine

DRS. JAMES L. GAMBLE and BENGT HAMILTON, Boston: Measurements of certain acid-base values in the urine support the view that the diuretic action of calcium chlorid and of magnesium sulphate is due to the acid and not to the basic radicals of these salts. Other measurements show that, following the ingestion of calcium chlorid, the increase of acid excretion is accompanied by a rise in ammonia and a roughly proportionate fall in urea. The rise in ammonia, however, falls considerably short of the chlorid increase, leaving a part of the increase in the amount of acid entering the urine which is not covered by the increase in ammonia production. A loss of fixed base from the body is accompanied or closely followed by excretion of a corresponding amount of body water. Accepting this, an increased excretion of fixed base in the urine may be regarded as indicating, and approximately measuring, the diuretic effect of a given agent. The administration of ammonium chlorid and ammonium produces results apparently identical in these aspects with those of calcium chlorid or of magnesium sulphate. Such acid-producing salts as calcium or ammonium chlorid and magnesium or ammonium sulphate are found, when given to patients with nephritis and edema, to cause an increase in fixed base excretion in the urine which is large and sustained, as compared with the effect produced in normal subjects. The fact that the ammonium salts of hydrochloric and sulphuric acid produce an effect which is not discernibly different from that of calcium chlorid or of magnesium sulphate would seem to indicate that calcium and magnesium play no part in the diuretic action

of these salts, and that it is due entirely to the large increase in acid metabolism.

The Normal Kidney a Filter for Bacteria

DR. HENRY F. HELMHOLZ, Rochester, Minn.: The results of our experiments indicate that the normal kidney does not permit bacteria injected intravenously to pass through into the urine until local changes are produced. Diuresis of moderate and even extreme degree, produced by saline, glucose or sucrose, does not increase the permeability of the kidney to bacteria. Clamping of the renal vein was the only condition that seemed to influence very definitely the permeability of the kidney.

Dehydration in the Nutritional Disorders of Infancy

DRS. A. GRAEME MITCHELL and LEON JONAS, Philadelphia: We have studied thirty-five dehydrated patients, in some of whom there were marked toxic symptoms; in others these symptoms were milder in degree and in still others a toxic state was not in evidence. Albumin was present in the urine in all but one case; sugar was found in two of the severe intoxication cases; traces of acetone were quite common, and casts were the rule. In ten severely sick babies, casts were always present; in twelve milder cases of intestinal intoxication, casts were absent in four instances; and in ten dehydrated cases without toxic symptoms, casts were absent six times. The toxic patients usually had fever, and casts are such a common finding in the urine in any febrile disturbance in infancy that their appearance probably has little significance. In the severely toxic patients, lowering of the alkali reserve was demonstrable in all but one patient when the carbon dioxid capacity of the plasma was examined. In the less toxic group there was a decided lowering of the carbon dioxid capacity in only two instances, while three infants showed a slight lowering. The mortality in the severely toxic group was 70 per cent.; in the milder cases of intestinal intoxication, 33 per cent. In the cases without toxic symptoms, no definite acidosis was demonstrated. In a series of infants on whom the phenolsulphonephthalein test was done, the degree of diminution in phenolsulphonephthalein excretion in the urine coincided fairly well with the severity of the toxic symptoms. Ten cases were studied pathologically. It seems apparent that the impairment of renal function in intestinal intoxication cannot be due in the majority of cases to a definite kidney lesion, but must depend on some other cause. It seems most probable that the cause lies in the depleted water supply of the body.

Morbidity and Mortality in the Negro Infant

DR. J. H. MASON KNOX, Baltimore: Although the general death rate of the negro in the registration area is about 15 per cent. higher than that of the white, the difference between the mortality rates of the two races in early infancy and childhood is most striking. More than one fourth of all negro children born alive die before 5 years of age. Among the outstanding causes of infant mortality in the negro infant are prematurity, tuberculosis, syphilis and secondary pneumonia. In the registration area, deaths from syphilis and tuberculosis are each four times as frequent in the negro as in the white infant, and pneumonia kills 2.3 times as many. The other sources of death, such as diarrhea and enteritis, are not conspiculously more prevalent among the negroes. These three diseases, syphilis, tuberculosis and pneumonia, account for 29 per cent. of all infant deaths among negro children, and only 7 per cent. of deaths among white children. There is even a larger proportion of deaths during the first weeks of life among negro infants than among the white.

Evaluation of a Health Clinic

DR. MAYNARD LADD, Boston: In an attempt to determine whether these clinics pay, we have analyzed the results of seven years' work in the preventive clinic of the Boston Dispensary. This dispensary supervises the health of children who are wards of two philanthropic societies. The number of children enrolled averages 578 annually. They are a group about whom very accurate data may be obtained, and we have had for seven years perhaps as uniform medical control of these children as could possibly exist. The highest death rate was 1.25 per cent.; the lowest, 0.33, deaths from all causes being included. During the last three years the medical service has been much more efficient, and the result has been a decided drop in the mortality as compared with the first four years, the average being 0.52 per cent. as compared with 1.11 per cent., or 5.2 per thousand, compared with 11.1 per thousand. The average for the seven years was 8.7 per thousand. If the deaths due to conditions present and active when the children were accepted for care are excluded, the death rate is exactly cut in half, 4.3 per thousand. The death rate during the first year of life was 4.9 per cent., or 49 per thousand; during the second year, excluding causes present and active at the time of acceptance, 3.2 per cent., or 32 per thousand; from 2 to 5 years, 9 per thousand, and after 6 years, 3.9 per thousand. Malnutrition as a primary cause of death was limited to three cases. There were no deaths from infectious diarrhea, diphtheria or scarlet fever in seven years. It may therefore be asserted that an infant mortality can be greatly reduced by intensive medical supervision. Such an organization as the preventive clinic of the Boston Dispensary is practical and of economic value in the supervision of the health of children under the control of social agencies in large centers in which hospital facilities exist for the necessary cooperation.

A Plan of Home Hospitals for Sick Infants

DR. HENRY DWIGHT CHAPIN, New York: Certain types of illness rarely thrive under ordinary hospital care. A peculiar aptitude is required for the successful nursing of delicate and sick infants. Many nurses, in spite of training, never acquire this training. Some years ago I tried the plan of sending out babies that were not doing well to some of the boarding homes in my Speedwell units. As the results were no better than those of the hospital treatment, the practice was discontinued. More recently, the plan has been worked out somewhat differently, by selecting a number of good homes with especially efficient foster mothers, who under special instruction could adapt themselves to such a work and thus form home hospitals. I now believe there is a promising future for this plan in dealing with many cases of sickness in babies that would otherwise be consigned to the hospital. The plan has the additional advantage of being comparatively inexpensive in reference to the results obtained. The plan is one that can be operated anywhere and everywhere without any outlay of capital; it stresses human service aside from bricks and mortar.

Human Milk: Its Commercial Production and Distribution

DR. B. RAYMOND HOOBLER, Detroit: The commercial production of human milk has passed through many vicissitudes, but each year it becomes more firmly established and in time will become a recognized occupation for many mothers. The output from the Bureau of Wetnurses in Detroit during the last eight years has been 414,242 ounces of human milk, approximately 13,808 quarts. In 1916 the milk was produced at a cost of 21 cents an ounce, while in 1923 it cost only 15 cents an ounce. Our present overhead expense could care for handling 100,000 ounces yearly, which would bring the cost of production to 10 cents an ounce. The cost of production includes the amount paid to the mother, which is a flat rate of 10 cents an ounce plus the cost of carfare. The cost of operation comes largely from private patients and from institutions; the total revenue for 1923 was $9,388.36. The bureau occupied quarters in the Woman's Hospital, so nothing is included for rent and refrigeration. Of the milk produced, 18,318 ounces was sold to private patients at 39 cents an ounce; it was sold in other quantities at 25, 20, 15, 10 and 8 cents an ounce, while 6,654 ounces was given to private patients too poor to pay. The bureau has a large clientele; some mothers have raised as many as three consecutive babies on the milk furnished by the bureau. The bureau keeps a sufficient number of producing mothers on its payroll to supply more than enough to cover its needs for private cases. This excess each twenty-four hours is distributed free of charge to hospitals caring for sick and premature infants. The largest proportion of producers come to us in answer to advertisements in the daily press.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

28: 1-132 (July) 1924

*Causes and Treatment of Otitis Media. D. T. Smith, Baltimore.—p. 1.
*Effect of Fasting on Metabolism of Epileptic Children. G. Hoeffel and M. Moriarty, Boston.—p. 16.
*Electrocardiogram in Cretinism and in Mongolian Idiocy. C. Thacher, Boston.—p. 25.
*Ketogenic Diet in Treatment of Epilepsy. M. G. Peterman, Rochester, Minn.—p. 28.
*Streptococcic Meningitis Treated with Injections of Gentian Violet. L. T. Royster, Charlottesville, Va.—p. 34.
Bone Lesions of Congenital Syphilis. C. R. Scott, New Haven, Conn.—p. 38.
*Dermatitis Diphtheritica. S. S. Greenbaum, Philadelphia.—p. 51.
Roentgen-Ray Studies of Stomach Function. J. L. Rogatz, New York.—p. 53.
Id. Peristolic Function. J. L. Rogatz, New York.—p. 69.
Acute Appendicitis and Pneumonia in Baby. J. V. Greenebaum and J. L. Ransohoff, Cincinnati.—p. 76.
Respiratory Diseases in Children: Review of Literature for Two Years. H. O. Foucar, Rochester, Minn.—p. 79.

Treatment of Otitis Media.—The high incidence (33.4 per cent. of 613 admissions) of otitis media in children between 3 and 15 months of age is shown by Smith's analysis of cases. It is also shown that treatment with mercuric chlorid irrigations is far from satisfactory. In 100 cases treated by this method seventy-four patients were cured, four required mastoid operations, and twenty-two either died or were lost sight of while the ears were still discharging. The average duration of the disease in the 100 cases was twenty-five and one-half days. A number of drugs and dyes were considered in an effort to find some one or some combination that would kill the organisms causing the disease without injuring the delicate structures of the ear. On the basis of these experiments and observations a new method of treatment was evolved. After trying a number of solutions it was found that ordinary commercial hydrogen peroxid diluted one-half with water was the most efficient irrigating fluid. In order to obtain good results from irrigations it is necessary to have a long, clean incision in the tympanic membrane, preferably in the posterior inferior quadrant. The drug penetrates into the middle ear and attacks directly the organisms responsible for the discharge. Not a single case of mastoiditis developed in a series of seventy-five acute and chronic cases which were irrigated with this solution. Practically all the gram-negative bacteria found in the ears of patients suffering from otitis media, except pyocyaneus bacilli, were killed by 0.5 per cent. solution of sodium hydroxymercuribenzophenone sulphonate. Pyocyaneous bacilli were readily eliminated by treatment with 2 per cent. acetic acid, or preferably with 0.5 per cent. of the sodium solution mentioned above which contains 2 per cent. acetic acid. All the gram-positive bacteria found in otitis media, except streptococci, were readily killed by gentian violet. Neutral acriflavine was more potent in the treatment of otitis media associated with streptococci, but even this drug was not entirely satisfactory.

Effect of Fasting on Metabolism of Epileptics.—Two cases were studied by Hoeffel and Moriarty. One patient underwent two fasts and the other one fast. There occurred marked reduction of the alkali reserve and a measurable increase in the hydrogen ion concentration of the blood; an increased excretion of ammonia and of the titratable acidity of the urine; a striking increase in the uric acid content of the blood; a decrease in the concentration of the sugar in the blood, which returns to normal after the fast is ended, and a distinct but temporary amelioration of epileptic symptoms.

Electrocardiogram in Cretinism.—Electrocardiograms of eight cretins and twelve mongolian idiots, taken before they had received any treatment, were studied by Thacher. In pure cretinism, as in myxedema, the T wave in the electrocardiogram is lowered, flattened or even inverted, and can be brought up to normal by the administration of thyroid. In mongolian idiocy there is no characteristic change in the electrocardiogram.

Ketogenic Diet in Epilepsy.—Of seventeen patients treated by Peterman with a ketogenic diet, ten are entirely free from convulsions; nine of these were treated with the diet alone. Four patients have shown remarkable improvement, in that the convulsions, which occurred from two to 200 times daily, have been reduced to one every two weeks in two instances, and to from three to four a day in the other two. Two patients have not been heard from. Only one patient still on the diet has failed to respond. Four patients were placed on a ketogenic diet with phenobarbital. One of these, with grand mal, has had no further attacks. Two, with grand mal, and one with grand and petit mal, have only occasional attacks. One patient has not been heard from. For comparison, the results of other types of treatment are cited. Forty-three patients received the routine treatment for epilepsy. Fifteen of these patients (ten with grand mal, two with petit mal, and three with grand and petit mal) are greatly improved, and have only occasional attacks. Eleven patients have not responded to treatment. Ten were not heard from.

Gentian Violet in Streptococcus Meningitis.—Royster asserts that this is the first case of meningitis treated with intraspinal injections of solutions of gentian violet on record. The patient was admitted to the hospital in such a condition as to lead to the supposition that he could not live for more than a few hours. As a result of the gentian violet treatment, apparently, the child lived for three weeks. It was felt by those observing this case that the gentian violet injections into the spinal canal gave no reaction of irritation. The probability is suggested that stronger solutions than those given would cause no irritation and might have been more efficacious.

Diphtheritic Dermatitis.—Greenbaum's patient had what was said to be an eczematous eruption on the left lower lid and on both cheeks, fissuring at the buccal commissures and fissures at the junction of the alae nasi and nasal septum with the upper lip. For almost three weeks he had been treated for what was supposed to be a simple eczematized impetigo. Suspicion was aroused when the applications usually specific for impetigo failed to produce any impression on the eruption. Cultures from the fissures were positive for the Klebs-Loeffler bacillus, although a second examination both of the skin and the nasal mucosa was negative. The patient was given 3,000 units of diphtheria antitoxin intravenously. Within twenty-four hours there was fully 90 per cent. improvement. Ten days later the fissures were but vestiges of what had previously been present. Another culture at this time was positive for the Klebs-Loeffler bacillus.

American Journal of Obstetrics and Gynecology, St. Louis

7: 637-768 (June) 1924

Anatomic and Clinical Studies on 875 Placentas. J. E. Davis, B. V. Kellog and A. L. Amolsch, Detroit.—p. 637.
*Serum Treatment of Puerperal Sepsis. H. Bailey, New York.—p. 658.
Statistical Study of Puerperal Sepsis. O. R. Eichel, Albany, N. Y.—p. 667.
*Conservative Treatment of Eclampsia. A. C. Beck, Brooklyn.—p. 677.
Statistical Review of Toxemias of Pregnancy. E. E. Bunzel, New York.—p. 686.
*Chemical Hysterectomy. W. W. Babcock, Philadelphia.—p. 693.
Roentgen-Ray Diagnosis of Normal and Abnormal Pregnancies. E. Speidel and H. H. Turner, Louisville, Ky.—p. 697.
Results of Radical Surgical Treatment of Procidentia by Murphy, Collins and Jackson Operations. E. P. Sloan, Bloomington, Ill.—p. 703.
*Case of Large Interstitial Fibroma of Cervix: Operations. R. B. Hall, Cincinnati.—p. 709.
Diabetes Mellitus in Pregnancy. H. J. Wiener, New York.—p. 710.

Serum Treatment of Puerperal Sepsis.—Bailey believes that the serum had a definite tendency toward localizing the disease by the production of a parametritis. The patients were kept out on a balcony between two wards, winter and spring, exposed to the outdoor temperature. Most of the beds were

protected by window screens in arches of the balcony so there was no direct draft. No local treatment was given.

Treatment of Eclampsia.—Beck does not interfere with the pregnancy. In no instance is pregnancy interrupted, neither is any effort made to hasten labor, except for an obstetric indication other than eclampsia. In general, the aim is to increase elimination, to lessen the irritability of the nervous system, and to protect the patient from all external stimuli. To favor elimination reliance is placed on an early large phlebotomy. If the blood pressure falls to 100 or the pulse rapidly changes, the phlebotomy is discontinued. Otherwise, 1,000 c.c. are withdrawn. The results from this procedure have been so striking that Beck now limits the use of other eliminative measures. Gastric lavage no longer is employed and colonic irrigations are given but once in twenty-four hours. To lessen the irritability of the nervous system, morphin has been used exclusively, one-half grain, given immediately after admission to hospital. It is repeated in one-fourth grain doses at intervals of one hour until the convulsions cease, or the respirations are markedly lowered. Patients are protected from external stimuli by placing them in a darkened room kept as quiet as possible. All measures that are not absolutely necessary are avoided. Phlebotomy is done immediately after a convulsion while the patient is in coma. Whenever possible hypodermics and other treatments are given during the coma that follows a convulsion. Frequent blood pressure determinations and catheterizations have been abandoned. They unnecessarily disturb the patient.

Zinc Chlorid in Inoperable Cancer of Cervix.—Babcock brings to attention an agent once used rather widely in inoperable cases of cervix cancer. He endorses the local application of zinc chlorid as a caustic in the treatment of carcinoma of the cervix; to quickly and permanently destroy infected metrium and endometrium; to produce amenorrhea; to produce permanent and absolute sterility, and to eradicate certain interuterine and intra-uterine tumors. He does not advocate this method for the treatment of adenocarcinoma of the fundus or other malignant uterine tumors, unless treatment by accepted measures is refused by the patient. Chemical hysterectomy is presented as an additional measure for the removal of the essential parts of the uterus, but it is to be used with care and good judgment. It has a somewhat limited field and will not eliminate the use of radium in gynecology or the scalpel for hysterectomy. It is probably more certain than simple ligation of the fallopian tubes or the use of roentgen rays or radium in producing sterility.

Interstitial Fibroma of Cervix.—Hall reports the case of a woman, aged 44, who had irregular and excessive menstrual periods and whose pelvis was entirely filled by a hard immovable tumor so that it was with great difficulty that a finger could be introduced into the vagina. The tumor presented at the vulva so that the lips were separated for more than 2 inches. The patient was suffering greatly from pressure symptoms. The diagnosis was made of fibroid tumors of the uterus with the principal tumor in the anterior lip of the cervix. There was no pedicle to the tumor. The tumor was enucleated. Excepting for two small fibroids on the fundus, the uterus was otherwise normal, and no further operation was necessary.

American Journal of Ophthalmology, Chicago

7: 505-576 (July) 1924

Pathology of Choroid. S. H. McKee, Montreal.—p. 505.
Trichinosis. J. B. Thomas and W. Cooper, Palo Alto, Calif.—p. 511.
Case of Traumatic Aniridia. W. E. Scott-Moncrieff, Victoria, B. C.—p. 513.
Radiation Therapy in Ophthalmology. S. Withers, Denver.—p. 514.
Blindness Caused by Inhalation of Coal Gases; Recovery. G. Fejér, Budapest, Hungary.—p. 522.
Accuracy of Skiascopy. C. A. Clapp, Baltimore.—p. 523.
After Results of Strabismus Operations. C. W. Hawley, Chicago.—p. 526.
Astigmatism in High Myopia. E. H. Oppenheimer, New York.—p. 530.
Removal of Foreign Body from Lens Without Permanent Opacity. T. H. Bell, Winnipeg, Canada.—p. 531.
Steel Imbedded in Eye Six Years Without Symptoms. J. A. Morgan, Honolulu, T. H.—p. 532.
Unilateral Neuroretinitis; Rapid Recovery. J. W. Smith, New York.—p. 532.
Forms and Prognosis of Glaucoma. G. H. Burnham, Toronto.—p. 533.

American Journal of Physiology, Baltimore

69: 1-209 (June) 1924

*Factors Influencing Excretion of Urea. I. Rate of Urine Excretion; Caffein. H. Bourquin, Vermilion, S. Dak.—p. 1.
Venous Pressure and Skin Blanching Pressure. H. L. White, St. Louis.—p. 10.
*Effects of Thyroid and Other Endocrine Products on Paramecium. L. L. Woodruff and W. W. Swingle, New Haven, Conn.—p. 21.
*Rate of Elimination of Inorganic Salts from Blood Stream. O. Barkus, Trudeau, N. Y.—p. 35.
Central Nervous Excitation by Alkaloids in Insects. W. J. Crozier and G. F. Pilz, New Brunswick, N. J.—p. 41.
Temperature Effects in Hearts of Twinned Embryo. W. J. Crozier and C. L. Hubbs, New Brunswick, N. J.—p. 43.
Conditions of Activity in Endocrine Glands. XIII. Sympathetic and Suprarenal Mechanism for Mobilizing Sugar in Hypoglycemia. W. B. Cannon, M. A. McIver and S. W. Bliss, Boston.—p. 46.
Biologic Food Tests. VII. Vitamin A and B Content of Fresh and Dehydrated Pumpkin. A. F. Morgan and L. D. Francis, Berkeley, Calif.—p. 67.
Cotton Seed Meal Injury. I. G. Macy and J. P. Outhouse, Berkeley, Calif.—p. 78.
*Weichardt's Supposed "Fatigue Toxin." F. S. Lee and B. Aronovitch, New York.—p. 92.
Id. F. S. Lee, New York.—p. 101.
Influence of Experimental Changes in Blood Sugar Level on Gastric Hunger Contractions. E. Bulatao and A. J. Carlson, Chicago.—p. 107.
*Fat Absorption from Mammalian Stomach. T. Inouye, New Haven, Conn.—p. 116.
*Blood Diastases. I. Significance in Normal Animal. S. J. Cohen, Chicago.—p. 125.
Paradoxic Cardiac Inhibition Following Lesions of Efferent Vagal Paths. J. Byrne, New York.—p. 132.
Effect of Insulin on Cold-Blooded Vertebrates Kept at Different Temperatures. J. M. D. Olmsted, Toronto.—p. 137.
Effect of Insulin on Blood. I. Changes in Oxygen Saturation, Percentage Hemoglobin and Oxygen Capacity. J. M. D. Olmsted and A. C. Taylor, Toronto.—p. 142.
Factors Influencing Assay of Insulin. N. R. Blatherwick and others, Santa Barbara, Calif.—p. 155.
Influence of Asphyxia on Vestibular Nystagmus. N. Kleitman and A. de Kleijn, Utrecht, Holland.—p. 160.
Mineral Metabolism Studies with Dairy Cattle. H. G. Miller, P. M. Brandt and R. C. Jones, Corvallis, Ore.—p. 169.
Circulation During Hypoglycemia from Large Doses of Insulin. D. J. Edwards and I. H. Page, New York.—p. 177.
Colloid Chemistry of Protoplasm. IV. Heat Coagulation. L. V. Heilbrunn, Ann Arbor, Mich.—p. 190.
*Measuring Intensity of Ultraviolet Light. J. H. Clark, Baltimore.—p. 200.

Effect of Caffein on Excretion of Urea.—The results reported by Bourquin are all derived from crucial experiments performed on dogs with denervated kidneys under barbital anesthesia. Caffein depresses, leaves unaltered, or augments the rate of excretion of urea. Augmentation is accompanied by a similar increase in elimination of ammonia and by a constant or very slightly lowered depression of freezing point values. These experiments do not demonstrate whether caffein produces its effect by vasomotor changes or direct action on the renal epithelium. Vasomotor changes such as would occur in a denervated kidney under the conditions of the experiment would not seem to account for the results obtained. It is concluded, therefore, that caffein probably acts directly on renal epithelium as a stimulant in some cases, as a depressant in others.

Effect of Endocrine Products on Cell Division.—The data supplied by Woodruff and Swingle show that neither thyroid, pineal, nor pituitary material possess intrinsic properties which accelerate cell division in paramecium. Furthermore, thyroxin does not accelerate cell division in paramecium. On the contrary, above certain concentrations it depresses cell division in paramecium.

Rate of Elimination from Blood Stream of Inorganic Salts.—Barkus asserts that intravenously injected chlorids disappear almost instantaneously from the blood stream. Intravenously injected sulphates are retained and probably stored, for they reappear only after a long period, and then disappear suddenly from the blood stream. Intravenously injected phosphates are retained for a long period; excretion and diffusion is rapid as long as the high partial pressure of dissociated phosphates is maintained; but on the return to a level near the normal, disappearance from the blood stream of the phosphate ion becomes very slow.

"Fatigue Toxin" Not Confirmed.—Experiments made by Lee and Aronovitch showed that when juice is pressed out of the muscles of fatigued animals and injected into other animals, there result stupor, no constant effect on respiration,

a temporary lowering of the body temperature, and occasionally subsequent death. Such fatigue juice when administered to excised muscles causes a marked decrease in their working power, as shown by a shortening of the working period and a decrease of the total work performed. Juice from the muscles of nonfatigued animals exerts the same action as fatigue juice, both on animals and on excised muscles. The experiments thus fail to confirm Weichardt's assumption of the existence of a specific toxin of fatigue.

Fat Absorption from Stomach.—Experimentally, Inouye demonstrated that when fat is introduced into a stomach ligated at the pylorus, some of it may pass through the stomach wall and appear in the lymph of the thoracic duct after a prolonged time. The amount of fat ordinarily absorbed in this way is so small as to be almost negligible in the consideration of fat transport in the organism.

Function of Blood Diastases.—Cohen suggests that the function of the blood diastases is their assistance in the breaking down of glycogen, and their ability or readiness to be mobilized to the organs where there is an immediate need for their action.

Measuring Intensity of Ultraviolet Light.—The intensity necessary to darken lithopone paint to a reflection factor of 50 per cent. is proposed by Clark as a unit of intensity of ultraviolet light. This lithopone unit gives a reasonably accurate measurement of the efficiency of an ultraviolet light source in producing erythema and killing bacteria.

Annals of Surgery, Philadelphia

79: 803-972 (June) 1924

Preoperative Preparation of Handicapped Surgical Patients. W. Walters, Rochester, Minn.—p. 803.
*Gas Gangrene. C. Goodman, New York.—p. 806.
*Incidence of Postoperative Catheterization in Johns Hopkins Hospital. R. G. Mills, Peking, China.—p. 813.
Four Thousand Cases of Goiter. A. S. Jackson, Madison, Wis.—p. 840.
*Subdiaphragmatic Abscess and Accumulations of Fluid. J. Douglas, New York.—p. 845.
Review of 5,488 Appendectomies. J. B. Deaver, Philadelphia, and J. A. H. Magoun, Toledo, Ohio.—p. 854.
*Report of 262 Consecutive Cases of Appendicitis. W. D. Gatch, Indianapolis, and D. C. Durman, Detroit.—p. 862.
Lymphoid Hyperplasia of Appendix in Children. T. A. Smith, New York.—p. 871.
*Tumor of Ovary with Twisted Pedicle. W. R. Rainey, St. Louis.—p. 879.
*Aneurysms of Iliac and Femoral Arteries. J. E. Thompson, Galveston, Tex.—p. 884.
*Combined Extirpation and Obliteration in Treatment of Varicose Veins. W. L. Keller, Washington, D. C.—p. 907.
Circular Constriction in Certain Cases Requiring Amputation. R. E. Farr, Minneapolis.—p. 913.
*Lack of Operative Indications in Allergy. W. Lintz, Brooklyn.—p. 917.

Serotherapy of Gas Gangrene.—Goodman reports a case of gas gangrene of the thigh following an accident in which recovery followed the injection of three large doses, 100 c.c., on consecutive days, of a serum representing a mixture of Welch's perfringens form of the gas bacillus type with tetanus. No amputation was done.

Incidence of Postoperative Catheterization.—Of the 2,254 patients whose histories are summarized by Mills, 279, or 12.38 per cent., were catheterized. Comparison with a previous series indicates great advance in surgical technic, but no decrease in the percentage of patients catheterized. The frequency with which the catheter was used for diagnostic purposes has greatly increased.

Subdiaphragmatic Abscess.—Eleven cases are reported by Douglas. Nine were on the right side, two on the left. Nine patients recovered, two died. Eight occurred as a preoperation lesion; three postoperatively as a complication during convalescence. Five were probably the result of perforated duodenal ulcer, although this was not always proven; three of appendicitis, one due to actinomycosis, one to echinococcus cyst of the liver, and one to a bullet wound of the upper portion of the liver. There was in most of the cases a mistake or at least a delay in the diagnosis, due to the belief that the lesion was above the diaphragm. In six of the acute cases there was a distinct history of severe abdominal pain, often accompanied by rigidity and sometimes by vomiting. In most of the cases the roentgen ray showed an elevated diaphragm and usually gas below the diaphragm. However, the physical signs over the base of the lung, usually due to compression by the elevated diaphragm and mistaken for pneumonia or fluid in the pleura, or to fluid which had accumulated in the pleura secondary to the infection below, caused the evidence of an abdominal lesion to be disregarded.

Gangrenous Appendicitis.—The death rate in a series of 262 consecutive cases of gangrenous appendicitis reported on by Gatch and Durman was 7.2 per cent.; in 205 cases complicated by abscess it was 9.2 per cent. Peritonitis caused eleven of the nineteen deaths which occurred in the series. The chief causes of peritonitis were purgation and extreme virulence of the infection. The preoperative intravenous injection of physiologic sodium chlorid solution is advocated as a treatment for all very sick patients. The advantages of the McBurney incision are pointed out. The expectant treatment of appendicitis is not advised.

Dermoid Cyst of Ovary with Twisted Pedicle.—Rainey's patient was only 2½ years of age. Her symptoms were suggestive of acute appendicitis. Rectal examination disclosed a large mass in the right lower quadrant. At operation a tumor mass the size of the fist, of a mottled, reddish and bluish color was found, originating in the right ovary and attached to a pedicle which was sharply twisted at the junction of the ovary with the fallopian tube. The tumor proved to be a dermoid cyst.

Aneurysms of Iliac and Femoral Arteries.—One of the three cases cited by Thompson was a traumatic arteriovenous aneurysm of the femoral vessels in the middle portion of the femoral (Hunter's) canal in which both the femoral artery and the terminal branch of the profunda femoris communicated directly with the femoral vein by separate fistulous openings. Another was a spontaneous aneurysm of the external iliac artery and the upper portion of the femoral which was completely consolidated proximately but open distally from the origin of the profunda. The third was a spontaneous aneurysm of the distal portion of the common iliac artery and the whole length of the external iliac trunk, in which ligature of the common iliac trunk six months previously had failed to effect a cure. The method of treatment was radically different in each of the cases.

Treatment of Varicose Veins.—Keller believes that the removal of the tortuous vein plays but a small part in the cure of the diasability incident to the general varicosity. The essential feature is the complete obliteration of the lumen of the vein and all its connections with the deep circulation. He removes nontortuous veins by the inversion method, and with a continuous suture of strong braided silk obliterates the tortuous veins between proximal and distal incisions, from 6 to 10 inches apart. These veins are divided between ligatures. Care is taken to include in this continuous suture all small lateral branches entering the main vessel. Such an application effects not only a complete collapse of the vessel walls, but the injury done to the intima of the vessel by the puncturing needle and the resulting pressure from the ligature has sufficient thrombogenetic action to ensure almost entire obliteration of the dilated lumen. All sutures are removed on the tenth day.

Operation for Asthma and Hay-Fever Useless.—Lintz asserts that a large number (30.4 per cent.) of asthmatics and other allergic patients are operated on, but that most of these operations are needless and useless. Nose and throat operations are the ones most frequently performed. The benefit derived from these operations is negligible and hence they should be abandoned. No operation will cure or even benefit asthma and hay-fever.

Archives of Dermatology and Syphilology, Chicago

10: 1-138 (July) 1924

*Toxicity and Reactions Caused by Arsphenamin and Neo-Arsphenamin. G. W. Raiziss and H. Brown, Philadelphia.—p. 1.
Metabolism Experiments in Infantile Eczema. D. S. D. Jessup, H. R. Mixsell, R. B. McCollum and N. Johann, New York.—p. 14.
*Comparative Study of Herrold Precipitation Test and Wassermann Reaction. M. H. Ebert and J. H. Mitchell, Chicago.—p. 36.
*Bacteriologic Research on Pruritus of Perineum. J. F. Montague, New York.—p. 42.
*Ossifying Sarcoma of Skin Metastatic from Ossifying Sarcoma of Humerus. C. W. Finnerud, Chicago.—p. 56.

Status of Complement Fixation Test in Relation to Cure of Syphilis. R. A. Kilduffe, Los Angeles.—p. 63.

Toxicity of Mercurials and Arsenicals.—Of the groups of compounds investigated by Raiziss and Brown, the mercurials are the most and the arsenicals the least injurious to the kidneys, while neo-arsphenamin is the least injurious. The latter can be given intravenously in relatively large quantities with the least amount of renal disturbance.

Comparison of Herrold and Wassermann Tests.—A total of 1,075 cases of syphilis were tested by Ebert and Mitchell with the Herrold and the Wassermann tests, with virtual agreement in 865 cases, and approximate agreement in 946 cases. When the two tests did not agree, the Wassermann test was the more sensitive in the majority of cases. Of a total of 885 nonsyphilitic cases, there was virtual agreement in 802 cases, and approximate agreement in 864 cases. There was a false strong Herrold test in only 0.68 per cent. It agrees with the Wassermann test in untreated secondary syphilis and in untreated congenital syphilis. It becomes positive later than the Wassermann test in untreated primary syphilis. It is less sensitive than the Wassermann test in treated cases and later in the disease. It is unsatisfactory in syphilis of the central nervous system. It is positive in a small but definite number of cases of syphilis in which the Wassermann test is negative. It is liable to errors of a different order than those of the Wassermann test. It is a valuable control for routine use with the Wassermann test. It is unsatisfactory with lipemic serums. If skilfully used, it is an admirable test for office use.

Infection Cause of Pruritus.—The observations made by Montague suggest a plausible relation between demonstrable infection and visible clinical lesions or alteration in the affected area. It is recommended that this fact be borne in mind in the treatment of cases presenting such lesions. This is particularly the case when vaccine therapy is contemplated. On the basis of experimental results Montague feels certain that both staphylococci and *Bacillus coli* can be justly regarded as the probable infective agents.

Ossifying Sarcoma of Skin; Metastatic.—The case reported by Finnerud is one of true bone formation in the skin, the result of metastasis of an ossifying sarcoma of the upper end of the right humerus. An exhaustive study of the literature revealed no similar illustration.

Archives of Neurology and Psychiatry, Chicago

12: 1-130 (July) 1924

*Myelinogeny Applied to Study of Behavior. F. Tilney and L. Casamajor, New York.—p. 1.
Tryparsamide Penetration into Central Nervous Tissue. H. G. Mehrtens, F. Kolos and H. Marshall, San Francisco.—p. 67.
*Herpes Zoster; Central Nervous System Lesions Similar to Those of Epidemic Encephalitis. W. Thalhimer, Milwaukee.—p. 73.
Nonspecific Stimulation Therapy in Tabes Dorsalis. E. H. Ahlswede, Buffalo.—p. 80.

Myelinogeny and Behavior.—The evidence produced by the study made by Tilney and Casamajor not only seems to support the hypothesis contained in Flechsig's myelinogenetic law, but points to the possibilities of further investigations concerning the structural basis of behavior.

Brain Lesions in Herpes Zoster.—A case of herpes zoster is reported by Thalhimer which ended fatally six weeks after the onset of the attack. Certain microscopic lesions found in the central nervous system are similar in some respects to the type of lesions present in the brain and spinal cord of patients dying from epidemic encephalitis or from poliomyelitis.

Colorado Medicine, Denver

21: 193-218 (July) 1924

Mortality Following Orchidectomy for Malignant Testicle. G. E. Rice, Pueblo.—p. 196.
*Lycopodium Spores in Intestinal Tract. H. Gauss, Denver.—p. 198.
Chronic Nervous Exhaustion. J. A. Buchanan, Pueblo.—p. 202.
Responsibility to Young. J. W. Amesse, Denver.—p. 208.
Duties of Hospital Dietitian. M. M. Monroe, Denver.—p. 212.
Syphilis of Stomach Simulating Ulcer. N. L. Beebe, Boulder.—p. 213.

Lycopodium Spores in Colon.—Attention is called by Gauss to the unusual accidental introduction of lycopodium spores into the colon which proved a source of confusion in the interpretation of a colitis.

Johns Hopkins Hospital Bulletin, Baltimore

35: 165-196 (June) 1924

*Case of Mixed Sex. Apparent Male, with Testis in Scrotum on Right Side; Ovary, Tube and Uterus in Inguinal Canal on Left Side. H. H. Young, Baltimore.—p. 165.
*Blood Pressure Following Reduction of Renal Substance: Simultaneous Changes in Blood Chemistry and Blood Volume. J. R. Cash, Baltimore.—p. 168.
*Comparison of Effects of Germanium Dioxid and of Sodium Germanate on Blood of Albino Rat. J. E. Nowrey, Jr., Baltimore.—p. 180.
Hofbauer Cells (Clasmatocytes) of Human Chorionic Villus. W. H. Lewis, Washington, D. C.—p. 183.
*Elevation in Blood Pressure Produced by Guanidin Compounds. R. H. Major and W. Stephenson, Kansas City, Kan.—p. 186.
*Experimental Observations on Suprarenals and Chromaffin System. G. B. Wislocki and S. J. Crowe, Baltimore.—p. 187.

Mixed Sex.—Young believes that this is the first human case of true lateral glandular hermaphroditism recorded. Unlike all the lateral hermaphrodites found in animals, the patient is masculine externally, though he has inactive tubules and a functioning ovary. The interstitial cells are, however, apparently hyperplastic and no well developed lutein cells are seen.

Effect of Reduction of Renal Tissue.—Reduction of renal tissue by excision and by the ligation of renal vessels has been followed, under certain conditions, in most cases studied by Cash, by a rise of both systolic and diastolic blood pressure and in all cases by a rise of diastolic pressure averaging about 27 mm. Hg. The conditions under which this change has occurred are: (*a*) that the total kidney substance be reduced at least 50 per cent.; (*b*) that, in addition, a portion of kidney which has been deprived of its circulation be allowed to remain in situ. Extensive necrosis of renal tissue alone, such as produced by widespread, bland, infarction of one kidney, or the ligation of one branch of a renal artery, has not proven sufficient, so far, to cause any rise of blood pressure. Complete excision of one kidney has also been unaccompanied by such a change. The increase in arterial tension reaches its height within a few days following the completion of the operative procedures, after which time it tends to return to normal. The rapidity with which the change occurs seems to be roughly proportional to the amount of functioning renal tissue remaining. After reduction of total kidney substance varying from 25 to 85 per cent. there has occurred no appreciable change in the amount of nonprotein nitrogen or total chlorids of the blood. Where the reduction has exceeded 50 per cent. there has always been observed an impairment of the animal's ability to excrete phenolsulphonephthalein. No constant changes have occurred in the volume of circulating blood, and edema has never been produced in these experiments.

Effect of Germanium Injections on Blood.—Nowrey injected three lots of ten mature rats with single doses of sodium germanate or germanium dioxid solutions. The animals of the first and second series received 17 mg. of sodium germanate per kilogram of body weight. Those of the third series were given 10 mg. of germanium dioxid per kilogram of body weight. The amount of germanium as element was in all cases the same. It was found that the rats which had received injections of the sodium germanate solutions showed a marked increase in the red cell counts and a slight increase in the percentage of hemoglobin. The rats which had been injected with the germanium dioxid solution showed little or no change in the erythrocyte counts and hemoglobin readings. The conclusions drawn from this experiment, therefore, are: (1) that germanium dioxid in neutral solution has no value as an erythropoietic agent; (2) that a solution of sodium germanate is an effective means for the production of an experimental polycythemia.

Effect of Guanidin on Blood Pressure.—In experiments reported on by Major and Stephenson, guanidin, methyl guanidin and dimethyl guanidin salts produce a marked and prolonged rise in blood pressure, accompanied by a slowing of the heart and a decrease in the respiratory rate. The rise in blood pressure produced by these substances may be abolished promptly by the use of calcium chlorid, either alone or combined with potassium chlorid. These experiments prove that substances normally excreted by the urine have a marked and prolonged pressor effect.

Experimental Suprarenal Insufficiency.—A suprarenal insufficiency was produced in dogs by the combined surgical removal of a part of the suprarenals and implantation of radium into the remainder. The radium produced an area of necrosis which gradually destroyed the suprarenal tissue. The medulla of the suprarenals and the abdominal chromaffin body were destroyed in the dog without producing symptoms. A fragment of cortex amounting to about one fifth of the total cortex was found to be necessary for the maintenance of life. After removal of all the cortex, the animals died with a terminal fall in blood pressure and temperature. If the cortex and the chromaffin system produce epinephrin, this would not explain death occurring after extirpation of the cortex.

Journal of Biological Chemistry, Baltimore

60: 237-479 (June) 1924

Buffer Mechanism for Calcion Concentration. I. N. Kugelmass, New Haven, Conn.—p. 237.
Relation of p_H to Tungstic Acid Precipitation of Protein. A. T. Merrill, Washington, D. C.—p. 257.
*Fat Excretion. II. Quantitative Relations of Fecal Lipoids. W. M. Sperry and W. R. Bloor, Rochester, N. Y.—p. 261.
Determination of Iodin in Food, Drink and Excreta. J. F. McClendon, Minneapolis.—p. 289.
Creatin Content of Brain. V. J. Harding and B. A. Eagles, Toronto. —p. 301.
Blood Changes and Clinical Symptoms After Oral Administration of Phosphates. H. A. Salvesen, A. B. Hastings and J. F. McIntosh, New York.—p. 311.
*Effect of Administration of Calcium Salts on Inorganic Composition of Blood. H. A. Salvesen, A. B. Hastings and J. F. McIntosh, New York.—p. 327.
Nutritional Requirements of Baby Chicks. IV. Vitamin A. E. B. Hart, H. Steenbock, S. Lepkovsky and J. G. Halpin, Madison, Wis. —p. 341.
Micro Vessel with Electrode for Estimating Hydrogen Ion Concentration of Blood and Other Body Fluids. F. De Eds and P. J. Hanzlik, San Francisco.—p. 6. 355.
*Uric Acid Problem. Experimental Study on Animals and Man. O. Folin, H. Berglund and C. Derick, Boston.—p. 361.
System of Blood Analysis. V. Preparation of Uric Acid Reagent. O. Folin and H. Trimble, Boston.—p. 473.

Fecal Lipoid.—The presence in feces of small amounts of an eighteen carbon fatty acid with three double bonds was demonstrated by Sperry and Bloor.

Effect of Calcium on Blood Composition.—Experiments made by Salvesen et al. show that the ingestion of calcium chlorid may produce a severe, uncompensated acidosis in dogs and human subjects with p_H values of 7.13 in a dog and 7.14 in a patient suffering from acute nephritis with edema. The blood calcium increased 20 per cent. in one dog, while it was unchanged in another. In two cases of Bright's disease with low blood calcium and low protein, calcium lactate, given orally, produced no characteristic change in the blood. The intravenous administration of from 0.50 to 1.10 gm. of calcium chlorid had no effect on the acid-base equilibrium of the blood, but caused a moderate rise in the phosphates. The injected calcium left the blood in from three to six hours. The daily excretion of calcium in urine and feces was not increased over a period of six days following the injection.

Uric Acid Study.—Folin and his associates report an extensive research made to determine what becomes of ingested uric acid. The paper is too long and full of valuable material to be abstracted. A few points may be noted. The distribution of injected uric acid is substantially the same in gouty subjects as in normal persons. There is no reason to believe that the muscles of gouty individuals contain much more uric acid than the muscles of normal subjects. Intravenous uric acid injections do not produce attacks in the gouty, but may produce enough temporary injury to the kidneys to result in a transient retention of other nitrogenous waste products than uric acid (increased nonprotein nitrogen and urea of blood). In normal persons no such retentions have been encountered. The unique and characteristic high levels of uric acid in normal human blood are due to a lack of responsiveness on the part of the kidney. This lack of sensitiveness is probably a feature of the uric acid absorbing power, rather than the power to excrete any uric acid that has been absorbed. The characteristic lack of responsiveness on the part of the human kidney is exaggerated in gout and this is the main or only reason why the gouty carry abnormally high levels of circulating uric acid.

Journal of Infectious Diseases, Chicago

35: 1-104 (July) 1924

Stability of Pneumococcus Types in Sterile Abscesses. E. Megrail and E. E. Ecker, Cleveland.—p. 1.
Surface Energy in Agglutination and Dispersion. R. G. Green and H. O. Halvorson, Minneapolis.—p. 5.
Differential Tests for Colon-Aerogenes Group. S. A. Koser, Washington, D. C.—p. 14.
Properties of Wassermann Antigens. E. Weiss and L. Arnold, Chicago. —p. 23.
*Myocardial Lesions of Diphtheria. A. S. Warthin, Ann Arbor, Mich. —p. 32.
Studies in Bacterial Metabolism. A. I. Kendall and R. C. Haner, Chicago.
LXX. Micrococcus Ovalis.—p. 67.
LXXI. Bacillus Bifidus.—p. 77.
LXXII. Bacillus Acidophilus.—p. 89.

Myocardial Lesions of Diphtheria.—While the clinical studies of the heart in diphtheria are in general agreement as to the symptomatology, the chief difficulty has lain in the interpretation of the pathologic findings and in the correlation of these with the physiologic phenomena. Warthin studied the hearts from sixteen necropsy cases of diphtheria. The essential lesion found was a toxic parenchymatous hyaline degeneration or necrosis, associated frequently with fatty degenerative infiltration and less frequently with cloudy swelling or a simple necrosis. Either a complete regeneration or a fibrosis may result. The toxin of diphtheria may damage the conducting mechanism as well as the contractile. No especial affinity is shown pathologically for either apparatus.

Journal of Parasitology, Urbana, Ill.

10: 171-224 (June) 1924

Trypanosoma Brucei as Filtrable Virus. W. W. Reich, Berkeley, Calif. —p. 171.
Ancient Worthies in Parasitology. A. E. Shipley, Cambridge, England. —p. 182.
Diphyllobothrium Latum in Minnesota. W. A. Riley, Minneapolis.—p. 188.
Zoophilism with Anopheles. L. O. Howard.—p. 191.
Reactions of Miracidia of Schistosoma Japonicum and S. Hematobium in Presence of Their Intermediate Hosts. E. C. Faust, Baltimore.—p. 199.
Capillaria Columbae from the Chicken and Turkey. H. W. Graybill, Princeton, N. J.—p. 205.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

23: 269-334 (May) 1924

Pharmacology of Phoradendron Flavescens. P. J. Hanzlik and W. O. French, San Francisco.—p. 269.
Susceptibility of Frogs to Convulsant Action of Acid Fuchsin. J. E. Thomas, St. Louis.—p. 307.

Journal of Radiology, Omaha

5: 183-220 (June) 1924

Removal of Pathologic Conditions at Apices of Teeth. W. L. Shearer and A. F. Tyler, Omaha.—p. 183.
Tumors of Mediastinum. E. W. Rowe, Lincoln, Neb.—p. 190.
Enlarged Thymus Gland. W. F. Drea, Colorado Springs, Colo.—p. 193.
Pyorrhea and Other Pus Conditions. F. A. Gillett, Oskaloosa, Ia.—p. 196.
Ultraviclet and Roentgen Ray in Thyrotoxicosis. O. W. Wyatt, Manning, Ia.—p. 197.
Diathermy in Pneumonia of Children. T. B. Lacey, Glenwood, Ia.—p. 200.

Kentucky Medical Journal, Bowling Green

22: 137-170 (May) 1924

Value and Limitations of Electrocardiograph. E. F. Horine, Louisville. —p. 144.
Pregnancy Complicated by Uterine Fibroma: Postoperative Intussusception: Nephritis: Uremia Fatality. L. W. Frank, Louisville.—p. 148.
Lacerations of Cervix. J. B. Lukins, Louisville.—p. 150.
Pulmonary Embolism After Phlebitis. L. W. Neblett, Louisville.—p. 152.
Hyperemesis Gravidarum: Case. J. A. Kirk, Louisville.—p. 154.
Sodium Fluoride Poisoning: Case. A. R. Bizot, Louisville.—p. 156.
Adenocarcinoma of Colon: Case. E. R. Gernert, Louisville.—p. 159.
Local Anesthesia: Cases. E. S. Allen, Louisville.—p. 161.
Foreign Body in Eye Fourteen Years. S. G. Dabney, Louisville.—p. 168.

Philippine Islands Medical Association Journal, Manlia

4: 169-208 (May) 1924

*Pathologic Survey of Causes of Death of Lepers at Culion. E. V. Pineda.—p. 169.
*Effects of Pancreatic Extract on Diabetic Patients. A. B. M. Sison and R. Navarro.—p. 178.
So-Called Occipitoposterior Position. A. Villarama.—p. 182.
*Paratyphoid Fever in Filipino: Case. C. Monserrat.—p. 188.

Cause of Death in Leprosy.—Pineda's report is based on 300 consecutive necropsies. In only 2.3 per cent. of the cases was leprosy the cause of death. Tuberculosis and nephritis head the list with 24 and 16.3 per cent., respectively. The figures presented differ markedly from those reported by McCoy in Hawaii, in that leprosy is rarely and tuberculosis and nephritis frequently the cause of death, but they approach those given by Hillis, Rake and Harper.

Extract of Pancreas in Diabetes.—According to Sison and Navarro the pancreatic extract prepared by the Bureau of Science has the same properties as the insulin prepared under the direction of the Insulin Committee of the University of Toronto. The value of the extract obtained from the islands of Langerhans in the treatment of diabetes mellitus is confirmed. With a close observation on the blood sugar of diabetic patients and a conservative method of dosage, the authors believe that the hypoglycemia can be eliminated as a complication during the administration of insulin.

Paratyphoid in Filipino.—Monserrat reports a case of true paratyphoid, as shown by the pathologic and bacteriologic findings. This is the third case reported in the Philippines.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

21: 81-160 (April-June) 1924

*Infant Welfare Movement. W. M. Feldman.—p. 81.
*Rickets and Osteomalacia. II. Differentiation Between Early Rickets, Late Rickets and Osteomalacia. H. S. Hutchison and G. Stapleton. —p. 96.
*Calcium and Phosphorus Content of Blood in Normal and Rachitic Children. II. Phosphorus. G. H. Anderson.—p. 107.
*Erythema Nodosum with Tuberculous Bacillemia and Meningitis. F. P. Weber.—p. 119.
*Thrombosis of Cerebral Sinuses Following Pneumonia and Other Morbid Conditions. W. G. Wyllie.—p. 124.
*Vaccine Treatment of Acute Rheumatism. H. H. C. Gregory.—p. 131.
Cystic Malformation of Lung. E. Cautley.—p. 138.
Ellis' Acid and Alkaline Diatheses: Hyperpiesia and Hypopiesia. F. P. Weber.—p. 140.

Infant Welfare Movement.—Feldman epitomizes the history of the movement for infant welfare from earliest recorded antiquity to the present day. He suggests (1) that general and child hygiene should be a subject of tuition in all schools, especially secondary schools. (2) Education of medical students and postgraduate teaching at medical schools of the physiology, pathology and hygiene of antenatal and early postnatal life in their theoretical and practical aspects. The course should also include a consideration of the important causes of antenatal and postnatal infantile mortality and their prevention. (3) Provision of good commodious and hygienic houses at a reasonable rental. With the supply of these needs the necessity for the various infant welfare centers will diminish. (4) The infant welfare and antenatal centers ought to have full-time medical officers, and such appointment should be given to doctors who have had special training. (5) The antenatal clinics should be merely branches of the infant welfare centers and not separate entities. (6) Establish prenuptial clinics, where persons of both sexes can get expert advice as regards their fitness to marry, both from the genetic and constitutional standpoints.

Rickets and Osteomalacia.—Early rickets, late rickets and osteomalacia, Hutchison and Stapleton assert, are identical and represent rickets at different ages. The primal causal factor is environmental. Pregnancy is of subsidiary importance in the causation of osteomalacia.

Calcium Content of Blood of Children.—The calcium content of the blood in forty normal children of ages ranging from 2 months to 11 years was found to vary between 6.4 and 9.5 mg. per hundred cubic centimeters. A very slight diminution in the blood calcium which corresponds with advance in age can be demonstrated during this period of life. The corpuscles were found to contain an appreciable quantity of calcium. Varying the calcium intake over short periods in two normal infants, and over much longer periods in dogs and goats, failed to produce any demonstrable variation in the blood calcium. In forty-five cases of rickets of varying severity the blood calcium content was found to vary between 6.0 and 9.9 mg. per hundred cubic centimeters. There appeared to be no correspondence between either the stage of the disease or the severity of the rachitic changes and the level of the blood calcium. The blood phosphorus in forty-nine normal infants between 3 months and 13 years was found to vary from 3.7 to 5.8 mg. per hundred cubic centimeters. No diminution corresponding with age during this period of life could be demonstrated. Neither the nature of the diet nor the recent ingestion of phosphorus-rich food appeared to be responsible for the variations occurring in normal infants. In twenty-nine cases of rickets the blood phosphorus was for the most part lower than normal. Definite signs of healing have not so far been accompanied by a corresponding rise in the level of the blood phosphorus, and in no case has a low inorganic phosphorus content given an indication of the presence of rickets before other definite signs of the disease had been recognized.

Erythema Nodosum and Tuberculosis.—Weber believes that the opinion entertained for a time by some that erythema nodosum was always causally connected with tuberculosis must be definitely abandoned. In many cases it cannot with certainty be attributed to tuberculosis, and not rarely occurs independently of any other obvious disease, or in association with any one of a variety of diseases, and in some cases the administration of bromides appears to have acted as an exciting factor. In some cases, however, erythema nodosum is a manifestation of a tuberculous bacillemia.

Cerebral Sinus Thrombosis.—Of the three cases of thrombosis of the cerebral sinuses reported by Wyllie, two occurred in children affected by pneumonia and the third in an infant suffering from diarrhea. The age in each case was less than 1½ years.

Vaccine Therapy of Rheumatism.—Gregory records her experience with the use of a vaccine in the treatment of eighteen cases of rheumatism in children. The vaccine was prepared from streptococcus found in the blood of a boy suffering from a severe attack of acute rheumatism. The idea was to use this as a protective vaccination, that is to say to protect early cases against carditis, rather than to attempt the treatment of cases in which the heart was already attacked. In all cases salicylates were given in large doses first, and as a rule the vaccine was not begun until the temperature had either reached the normal or had settled down to the 99 to 100 F. level. The vaccine was given on alternate days. A small dose (four millions) was given at first, but as the dose was doubled each time, the final amount was 512 millions. Gregory thinks it likely that the streptococcus she found is the causative organism of rheumatism.

British Journal of Dermatology and Syphilis, London

36: 235-284 (June) 1924

Tradition in Dermatology. H. MacCormac.—p. 235.
Relapses in Lupus Vulgaris; Treament with Concentrated Carbon Arc Light. K. A. Heiberg and S. Lomholt.—p. 245.
Syphilitic Chancre of Lips. H. Goodman and S. Goodman.—p. 253.

Heart, London

11: 81-193 (April) 1924

*Sino-Auricular Heart Block in Dog Suffering from Experimental Streptococcus Endocarditis. P. S. Barker and R. A. Kinsella.—p. 81.
*Action of Certain Drugs in Clinical Flutter. A. M. Wedd.—p. 87.
*Development and Propagaton of Excitatory Process in Perfused Heart. E. C. Andrus and E. P. Carter.—p. 97.
Force Exerted by Minute Vessels of Skin in Contracting. T. Lewis.—p. 109.
Vascular Reactions of Skin to Injury. I. Reaction of Stroking; Urticaria Factitia. T. Lewis.—p. 119.
Influence of Alcohol on Isolated Mammalian Heart. R. Sulzer.—p. 141.
*Studies of Capillary Pulsation: Vasodilatation in Aortic Regurgitation; Effects of Heating Human Skin. T. Lewis.—p. 151.

Sino-Auricular Heart Block with Experimental Endocarditis.—A dog suffering from experimental streptococcus endocarditis developed sino-auricular block shortly before death. Postmortem an inflammatory process was seen to involve the wall of the right atrium on all sides of the sino-auricular node. The node itself appeared normal. Although an anatomic basis for sino-auricular block is seen by Barker and Kinsella in this isolated case, it is not implied that sino-

auricular block as commonly observed in man arises in this fashion.

Action of Digitalis and Quinidin in Auricular Flutter.—The action of digitalis, atropin and quinidin in clinical auricular flutter has been studied by Wedd in twelve cases and the results found to be consistent with the theory of a circus rhythm as the underlying cause of flutter. The changes produced by digitalis are variable, the reaction being a complex one depending on the dual action of that drug. After atropin, the auricular rate may fall or it may increase. The ventricle tends to respond at a half rhythm. Quinidin produces a fall of auricular rate; the change in ventricular rate depends on its initial rate of beating, it may rise or fall, but tends to maintain a 2:1 rhythm. A greater lowering of auricular rate by quinidin was obtained under digitalis than without it in two cases. It is suggested that in treating flutter the production of fibrillation should be avoided and, by the combined use of quinidin and digitalis or by following digitalis by quinidin, to attempt to break up the circus rhythm by raising the refractory period of the muscle.

Experiments on Excitatory Process of Heart.—An account is given by Andrus and Carter of a series of experiments carried out on the perfused hearts of terrapin and dogs. It is demonstrated that in these preparations it is possible to control accurately, to accelerate and to retard, to abolish and to restore the development of the excitatory process and its propagation by changing the p_H of the perfusion fluid. On the basis of these results it is suggested that the rhythm and rate of conduction in the cardiac tissue is normally determined solely, or in large part, by the p_H of the surrounding fluid. It is considered that the excitatory process in the heart, as in other irritable tissues, represents a disturbance of ionic equilibrium between cell contents and tissue fluid, and that conduction is due to the direct stimulation of adjacent tissue by the disturbance so developed at the point originally excited.

Skin Temperature.—A method of obtaining skin temperature rapidly and accurately is described by Lewis, and a number of observations relevant to capillary pulsation are recorded. These include observations on the temperature of the facial skin in aortic regurgitation, in bilateral and unilateral facial erythema and in small inflammatory skin foci. The local change in skin temperature during the formation of urticarial wheals, and on closing a free anastomosis between an artery and vein, are also described and discussed.

International Journal of Psycho-Analysis, London

4: 400-530 (Oct.) 1923

Theory of Anal Character. K. Abraham.—p. 400.
Development of Child. M. Klein.—p. 419.
Social Considerations in Some Analyses. S. Ferenczi.—p. 475.

Irish Journal of Medical Science, Dublin

5: 195-243 (May) 1924

Prevention and Treatment of Congenital Syphilis. T. P. C. Kirkpatrick.—p. 195.
Morphology of Basement Membrane. E. J. R. Evatt.—p. 210.

Lancet, London

1: 1195-1246 (June 14) 1924

Tuberculosis Work of Ministry of Pensions. A. Sandison and G. B. Price.—p. 1195.
*Hyperglycemia and Glycosuria in Acromegaly. A. W. M. Ellis.—p. 1200.
*Hemorrhagic Disease of New-Born. N. B. Capon.—p. 1203.
Vitamin A Deficiency in Denmark. E. Widmark.—p. 1206.
*Seminal Vesiculitis Treated by Operation. H. C. Edwards.—p. 1209.
Use of Noninflammable Cellulose Splints Without Preliminary Plaster Casts. Z. P. Fernandez.—p. 1210.
Improved Bone Drill. P. B. Roth.—p. 1216.

Hyperglycemia in Acromegaly.—A case of glycosuria occurring in an acromegalic patient showed the following points of especial interest: (1) severe hyperglycemia, the blood sugar on admission being 0.43 per cent.; (2) the successful accomplishment, after adequate dieting, of a major operation of prolonged nature, and the occurrence of only transient postoperative glycosuria; (3) the disappearance of glycosuria and hyperglycemia following hypophysectomy and, although diminished carbohydrate tolerance is still present, the absence of glycosuria three years after the operation; (4) histologic evidence suggesting the origin of the tumor in the pars intermedia; (5) the occurrence of a tumor of the carotid body. The suggestion is advanced by Ellis that the glycosuria of acromegaly is due to an increased activity of the hypophysis, probably the pars intermedia, with a resulting interference with the normal action of insulin on carbohydrate metabolism.

Hemorrhagic Disease of New-Born.—Capon cites six cases—one of them occurring in a prematurely born baby, the only one in the series that died. The treatment in these cases consisted of the intramuscular and subcutaneous injection of horse serum, maternal and paternal blood, both oxalated and citrated, calcium lactate and epinephrin. With one exception, the infants were females, and the family history did not reveal any "bleeders." In no case was there any reason to believe that hemorrhage was secondary to some gross underlying cause, for instance, syphilis or sepsis. The average age when hemorrhage began was fifty-one hours.

Seminal Vesiculitis.—The common feature in Edwards' two cases was the presence of *Bacillus coli* in pure culture as a cause of seminal vesiculitis. In the first case, the course was an abscess tracking to the surface and recurrent pyrexia from toxemia, and, at the same time, symptoms of chronic cystitis. In the second case the symptoms were those of obstruction which had been mistaken for enlargement of the prostate. The transvesical method of operation was used.

Medical Journal of Australia, Syndey

1: 453-476 (May 10) 1924

Surgical Anatomy of Arteries of Alimentary Canal. V. M. Coppleson.—p. 453
Standardization of Hospitals by American College of Surgeons. F. H. Martin.—p. 457.
Filariasis of Broad Ligament with Postoperative Tetanus. R. W. Cilento and V. F. O'Neill.—p. 462.
*Functional Paralysis. A. H. à Court.—p. 464.

SUPPLEMENT

Preparation of Diphtheria Antitoxin. F. G. Morgan.—p. 289.
Prevention of Diphtheria. D. L. Barlow and G. H. Burnell.—p. 290.
Schick Reaction in Country Schools. E. W. Ferguson and E. L. Morgan.—p. 295.
Rôle of Practitioner in Control of Diphtheria. F. V. Scholes.—p. 298.
Control of Diphtheria. T. W. Sinclair.—p. 300.
Industrial Hygiene in Disease Prevention A. J. Lanza.—p. 304.
Morbidity Figures of Public Service Occupations. F. R. Kerr.—p. 306.
Tram Man's Life and Occupational Diseases. C. A. Ellis.—p. 308.
Industrial Medicine. D. G. Robertson.—p. 310.
Color Testing. G. H. Taylor.—p. 311.

1: 477-502 (May 17) 1924

Parathyroid in Mental Conditions. E. J. T. Thompson.—p. 477.
Blood Transfusion. C. T. Turner.—p. 483.
Peanut in Trachea of Young Child. L. D. Cowling.—p. 489.

SUPPLEMENT

Psychology of Color. G. H. Taylor.—p. 313.
Sickness and Accident in Relation to Employment. J. S. Purdy.—p. 314.
Malaria in Australia. R. W. Cilento.—p. 315.
Prophylaxis of Malaria in Navy in Time of War. T. A. Kidston.—p. 317.
Activities of Australian Hookworm Campaign. W. C. Sweet.—p. 319.
Filariasis in Australia. R. W. Cilento and R. E. Richards.—p. 325.
Country Health Administration. F. F. Longley.—p. 327.
Sciences Underlying Public Health. W. A. Sawyer.—p. 330.
Preventive Ophthalmology. D. D. Paton.—p. 332.

Functional Paralysis.—Court reports a case of functional disability engrafted on a basis of organic disease. After a bed-ridden existence extending over a period of ten years, a few weeks in hospital enabled the patient to recover the power of walking and altered her condition to an extrordinary degree.

Sei-I-Kwai Medical Journal, Tokyo, Japan

43: 1-21 (April) 1924

Ethylene-Oxygen Anesthesia. A. B. Luckhardt and D. Lewis.—p. 1.
Appendicitis. Y. Takaki.—p. 20.
Spectroscopic Studies of Liver Bile. S. Kodama.—p. 21.

South African Medical Record, Cape Town

22: 223-246 (May 24) 1924

Brain Surgery. C. C. Elliott.—p. 224.
Prophylaxis. A. J. Orenstein.—p. 233.
Febrile Treatment of Syphilitic Disease. A. M. Moll.—p. 238.

Bulletin de l'Académie de Médecine, Paris

91: 699-719 (June 3) 1924

*Faradization in Diarrhea. E. Doumer.—p. 703.
Carotid Arteriovenous Aneurysm. H. Rouvillois.—p. 705.
*Smooth Fibers of Uterus. H. Keiffer.—p. 709.
Kinematographic Radiography of Human Heart. Lomon and Comandon.—p. 711.
Gastroscope with Guiding Wire. R. Bensaude.—p. 712.
Nematelminth in Human Liver. A. Pettit and A. Sicé.—p. 716.

Faradization in Diarrhea of Infants.—Doumer used electrotherapy in fifty-two children with chronic diarrhea in which drugs and a strict water diet had failed. The treatment consisted in faradization of the abdominal wall with galvanofaradic or magnetofaradic currents, one electrode being applied to the pubis while the other was moved slowly over the colon and liver. Each application was continued until a contraction of the abdominal muscles became evident, which took four or five minutes. The faradization should not produce pain and should be repeated two or three times daily. Doumer noted an arrest or notable diminution of the diarrhea after the first treatment and a complete recovery in forty-eight hours. His conclusion is that an electric current does not destroy the bacteria, but changes the medium where they live by acting on the nervous system or on intestinal, and especially biliary secretions.

Contractility of Smooth Fibers in Uterus.—Keiffer experimented on the guinea-pig at the end of pregnancy, producing contraction of the uterus through asphyxia. His opinion is that the contraction of muscular bundles produces not only a lengthwise shortening but also a shortening by folds and wavy movements. This is necessary for forcible and rapid changes in different diameters of the uterine cavity and for the propulsion of the fetus. Research on human uteri retracted after hysterectomy confirmed the findings in the guinea-pig.

Bulletin Médical, Paris

38: 697-716 (June 21) 1924

High Blood Pressure in the Menopause. Giroux and Yacoel.—p. 703.
Vitamins as Aid in Mineral Metabolism. G. Houlbert.—p. 705.
Arguments Against Introduction of Compulsory Health Insurance in France. H. Roulland.—p. 707.

Bulletins de la Société Médicale des Hôpitaux, Paris

48: 811-849 (June 6) 1924

*Thyroid Treatment of Eczema. R. Benard.—p. 812.
Intense Azotemia with Long Survival in Syphilitic. Pinard.—p. 813.
Frequency of Undescended Testes. Pouzin-Malègue.—p. 819.
*Paradoxes of Pleural Adhesion. Y. Pouzin-Malègue.—p. 821.
Results of Antituberculosis Serotherapy. A. Jousset.—p. 826.
Intense Asystolia with Normal Right Ventricle. Laubry et al.—p. 831.
Idem with Mitral Defect. Lemierre and Bernard.—p. 835.
Recovery in Typhoid Under Bacteriophage Treatment. Richet et al.—p. 838.
*Laryngeal Neurosis. E. Halphen and A. Aubin.—p. 841.
Artificial Pneumothorax in the Tuberculous with Heart Disease. Bernard et al.—p. 843.

Thyroid Treatment of Eczema.—Benard's patient was a young woman who for two and a half years had been tormented with extensive itching eczema of the buttocks which had resisted all treatment. Some minor signs of thyroid deficiency finally gave the clue to effectual treatment. By the end of the second week of thyroid treatment the eczema had disappeared, and there has been no return during the two years since.

Signs of Adhesion of the Pleura.—Pouzin-Malègue presents evidence to show that none of the alleged signs are reliable. The only way to determine whether artificial pneumothorax is practicable is to try to induce it.

Essential Laryngeal Seizures.—For twelve years the man, aged 49, had been having attacks that began with a tickling in the throat, with coughing, cyanosis, a fall and loss of consciousness, but there was no aura, no biting of the tongue and no emission of urine. No treatment had given relief until alcohol was injected into both superior laryngeal nerves. There has been no further ictus during the eighteen months since. Injection of alcohol in the intercricothyroid region has proved effectual in relieving the pain of laryngeal tuberculosis and neuralgia, and seems to be harmless.

Comptes Rendus de la Société de Biologie, Paris

90: 1441-1480 (June 6) 1924. Partial Index

Action of Thyroid Epithelium in Pure Cultures on Growth of Fibroblasts. A. H. Ebeling.—p. 1449.
Monomolecular Coating on Erythrocytes and Walls of Capillaries. P. Lecomte du Noüy.—p. 1450.
*Lymphoid Nodules in Guinea-Pig Lung. A. Guieysse-Pellissier.—p. 1452.
*Cholesterol. Rémond, Colombiès and Bernardbeig.—p. 1455.
Granules in Elastic Fibers. M. de Kervily.—p. 1457.
*Gelatin Medium for Blood Cultures. Delater and Merle.—p. 1458.
*Survival of Testis Implant in Hen. Pézard, Sand and Caridroit.—p. 1459.
*Action of Gelatin on the Bacteriophage. P. Hauduroy.—p. 1463.
*Ameboid Movements of Leukocytes. N. Fiessinger and A. Jamin.—p. 1464.
Fundamental and Secondary Anthropologic Types. K. Stolyhwo.—p. 1467.
Relations Between Stellate Ganglions and Epinephrin. B. Gutowski.—p. 1469.
Immunization Against Diphtheria. R. Baranski and H. Brokman.—p. 1470.
Action of Biodialysates of Brain Tissue. B. Gutowski.—p. 1471.
Biodialysis. Idem.—p. 1473.
*Physiologic Leukocytosis. A. Kobryner.—p. 1475.
*Action of Various Substances on Pancreas Secretion. M. Skarzynska.—p. 1476.
Secretin as Agent of Pancreas Secretion. Idem.—p. 1479.

Lymphoid Nodules in Lung of Guinea-Pig.—Guieysse-Pellissier reports that his experiments on the guinea-pig proved the presence of lymphoid nodules in the parenchyma of the lungs. The size varies from a small group of five or six cells to 0.10 mm. in diameter. The nodules contain a spherical strongly staining nucleus or large cells similar to germ cells, some of them in the phase of karyokinesis. He emphasizes the significance of this finding in the pathology of the lung. His conclusion is that pronounced hyperplasia of lymphoid cells, which occurs in every pulmonary disturbance, is of local origin. There seems to be an actual diffuse lymphoid organ in the walls of the alveoli. It is evident in the dog and rabbit but most pronounced in the guinea-pig.

Research on Cholesterol.—Rémond, Colombiès and Bernardbeig found in their experiments on dogs that the spleen does not play any part in the hypercholesterolemia during digestion.

"Traveling Mediums."—Delater and Merle comment on the advantages of admixture of 12 per cent. gelatin to the culture medium in which blood is sent by mail for examination. The blood, buried in the depths of the gelatin mixture, is protected against contamination in any position, while it is released by merely heating the gelatin. They give two formulas for these traveling mediums.

Experimental Hermaphrodism.—Pézard and his co-workers, after having performed an almost complete ovariectomy in a hen, 4 months old, implanted near the left kidney testicle tissue from a young cock of the same brood, which was still in the prespermatogenic stage. Necropsy after nineteen months showed in the left side a normally situated, reduced ovary containing ripe eggs, and nearby, in place of implantation, a testicle the size of a hazelnut, inclosed in a tunica albuginea. The implant had developed and persisted, owing to ample vascularization although deprived of the efferent duct. The histologic structure did not change. This excludes, in their opinion, the existence of a morphogenetic antagonism between opposite gonads, as well as an antagonism of hormones.

Action of Gelatin on the Bacteriophage.—Hauduroy claims that the prevention of the d'Herelle phenomenon by gelatin is due exclusively to its high viscosity. His experiments showed that besides gelatin, also agar and white of egg mixed with peptone water have an inhibiting effect on the lysis. The bacteriophage is not destroyed, as lysis occurs if the viscosity of the medium is reduced. His conclusion is that the bacteriophage must come in contact with the bacterium and act like a parasite in order to develop and exert the lytic action.

Action of Saline Solutions on Ameboid Movements of Leukocytes.—Fiessinger and Jamin emphasize the resistance of leukocytes preserved in blood plasma. The ameboid movements of the leukocytes persist in a medium in which the red corpuscles lose their normal aspect. Their experiments indicate that pseudopodism of leukocytes is more pronounced in a solution of magnesium chlorid than of sodium chlorid in equal concentration.

Variations in Physiologic Leukocytosis in Man.—Kobryner reports that 722 single observations during a total of 370 hours

convinced him that neither digestion nor food assimilation has any influence on the leukocytosis curve. This curve, composed of large and small waves, reveals oscillations which are sometimes notable. It may be assumed that the waves depend on some intermediary compound substances produced by metabolism of albuminoids. If the count happened to be made during an ascending wave, hyperleukocytosis was found, and hypoleukocytosis if made on a descending wave. These physiologic variations deprive Widal's hemoclastic crisis and the oculocardiac reflex of precision in diagnosis.

Action of Extracts on Pancreatic Secretion.—Skarzynska refers to Popielski who asserted that not only secretin but administration of all tissue extracts and peptone produces increase of secretion in the pancreas. He attributed it to a sudden dropping of arterial pressure and to the noncoagulation of the blood which follow any injection, and are not connected with the presence of secretin in the extract. Skarzynska reports that her experiences showed the action of secretin on pancreatic secretion to be three times more intensive than the action of histamin, and considerably more than the action of spinach extract, peptone and gastrin. The increase of pancreatic secretion is not connected with the arterial pressure, but depends on the extract itself.

Journal de Chirurgie, Paris

23: 449-576 (May) 1924

*Hydatid Cysts in the Bones of the Pelvis. Desplas et al.—p. 449.
The Advantages of the Jaboulay Button. Delore et al.—p. 478.

Hydatid Cysts in Bones of the Pelvis.—In the case reported by Desplas, Boppe and Bertrand, the echinococcosis had been mistaken for dislocation of the hip joint with fracture from an assumed sarcomatous process of four years' duration with only slight impairment of the general health. An incision released 2 liters of fluid from a cavity in the ilium. They tabulate the details of forty-three similar cases from the literature. The correct diagnosis was rarely made. One girl was treated with radium and the true nature of the lesion was not recognized until five years later. Recovery after resection is noted in nine of the cases.

Médecine, Paris

5: 661-736 (June) 1924

Electroradiology and Physiotherapy in 1923. A. Zimmern.—p. 661.
Mercury Vapor Lamp from Standpoint of the Eye. Broca.—p. 672.
*Prophylactic and Curative Action of Sunlight. A. Rollier.—p. 676.
*Inhalation of Thorium. Cluzet and Chevallier.—p. 681.
Blood Count Under Experimental Irradiation. Lacassagne and Lavedan.—p. 683.
Electric Conductibility of Living Tissues. A. Strohl.—p. 689.
Roentgen Examination in Pregnancy and Obstetrics. Haret.—p. 693.
Iodized Oil in Roentgen Examination of Air Passages. Cottenot.—p. 696.
Pyelography with Kidney and Ureter Calculi. L. Papin.—p. 700.
Artificial Sunlight in Treatment of Tuberculosis. Dufestel.—p. 705.
Reaction to Mineral Waters as Aid in Diagnosis. Bergouignan.—p. 708.
Mode of Action of Vichy Mineral Waters. Bierry.—p. 713.
*Radioactive Emanations of Mineral Waters. Alquier.—p. 718.
Work of the Heart During Athletic Sports. Chailley-Bert.—p. 720.
The Episcope for Lantern Reproductions. L. Garrelon.—p. 726.
The Newer Drugs Used in Treatment of Syphilis. H. Gougerot. Supplement.—pp. 1-47.

Physiologic and Curative Action of Sunlight.—Rollier insists that air and sunlight are the natural medium for the entire body. The biologic value of the pigment is being confirmed more and more. He is inclined to regard it as a transforming mechanism, like that of certain fluorescent substances which transform rays with short waves into longer and more penetrating waves. The pigment probably receives, furnishes and activates the elements essential for the metabolism of hormones. The sun bath by dilating the capillaries activates the circulation, and the vibratory shock of the sun's rays may induce a continuous tonic action on the sensory nerve terminals in the skin, thus restoring tone to the muscles and promoting physiologic processes throughout the body, including recalcification of the bones. This property of sunlight, to which he called attention long ago, in his earliest studies of the subject, has been brilliantly confirmed by the recent works on the curative influence of sunlight in rickets. He accepts as plausible that the light absorbed by the blood makes it a reservoir of radiant energy which activates the intracellular oxidation and reduction processes. The local action of whole sun baths is microbicidal, analgesic and sclerosis and reduction promoting, while the general action is to stimulate to the utmost the entire vital activity. On the basis of 15,000 to 16,000 roentgenograms, he affirms that no closed bone lesion, whatever its location, its depth or its gravity, escapes the curative action of the sun. The main principle in treatment should be to allow free access to the sun and avoid everything liable to interfere with muscle functioning. Occlusive plaster casts sin against both these principles. In his 300 cases of tuberculous peritonitis, he never had to resort to laparotomy. The multiple manifestations of what used to be called surgical tuberculosis are the main field for heliotherapy, but the "solar dressing" is applicable to wounds and traumatisms of all kinds. In burns with vast ulceration the soothing and healing effect was particularly manifest. He urges arrangements for sun and air baths in all schools, public and private, in orphan asylums, barracks, and in general in the cities.

Treatment by Inhalation of Thorium.—Cluzet and Chevallier report improvement under this treatment in four cases of myeloid and two of lymphatic leukemia, all chronic (no benefit was noted in acute cases). Also in four cases of grave anemia, and in two patients with uricacidemia. They use a small portable apparatus, with mask, for the inhalations.

Radioactive Mineral Waters.—Alquier uses an amethyst colored glass to catch the water, and avoids traumatizing the water, in order to conserve its radiations and gases.

Paris Médical

541-556 (June 14) 1924

Critical Remarks on Psychanalysis. H. Claude.—p. 541.
Oscillogram in Arterial Hypertension. C. Finck.—p. 542.
Breaking Up Pleural Adhesions. R. Hervé.—p. 547.
Hydatid Cysts. H. Verger et al.—p. 551.
Treatment of Fractures. A. Schwartz.—p. 553.
Treatment of Chronic Throat and Nose Disease. J. Helsmoortel, Jr.—p. 554.

Presse Médicale, Paris

32: 525-536 (June 18) 1924

Minor Signs of Gallstone Dyspepsia. F. Ramond.—p. 525.
The Vernes' Seroreaction in Syphilis. R. Demanche and L. Guenot.—p. 526.
Vernes' Syphilimetry. Lortat-Jacob and Legrain.—p. 527.
Hydatid Cyst in the Lung. E. Petit de la Villéon.—p. 527.

32: 537-544 (June 21) 1924

*Separation of Epiphysis of Neck of Femur. H. Vulliet.—p. 537.
Dropsy of the Gallbladder. G. J. Petrescu.—p. 539.
Desiccated Meat Juice in Therapeutics. L. Cheinisse.—p. 541.

Separation of the Neck of the Femur in Girls.—Vulliet describes, with nine illustrations, five cases of separation of the epiphysis of the head of the femur in girls at the age of puberty, but who had not yet menstruated. All were overweight and of the adiposogenital type. The clinical course was some pain in the hip, slight or intermittent lameness, and reduction of movements. Some slight injury suddenly aggravated these symptoms, and then the clinical and roentgenologic examination revealed the separation of the epiphysis. He emphasizes that in these cases the trauma plays a secondary part, the first and important part being the pathologic changes in the neck of the femur. The roentgen rays show sometimes a rarefying in the epiphysis of the femur. The etiology is still unknown. The treatment consists in fixation in plaster to insure consolidation. In three of his cases perfect function was restored, but the roentgenogram shows still slight changes in the joint.

Progrès Médical, Paris

377-392 (June 21) 1924

Diagnosis of Pressure on the Spinal Cord. C. Achard.—p. 377.
Acute Inversion of Uterus. Jeannin.—p. 381.

393-416 (June 28) 1924

*Frambesia as a Parasyphilitic Affection. L. Bory.—p. 393.
Intestinal Autointoxication Treated by Mistake as Liver Disease. J. J. Matignon.—p. 395.
Whooping Cough. P. Lereboullet.—p. 398.

Frambesia as the Primary Syphilis.—Bory's opinion is that yaws of the tropical countries is of common origin with

syphilis. The disease is inoculable and highly contagious, but is not contracted by sexual intercourse, as the mucous membranes are intact. It develops mostly in childhood, when the virus penetrates through excoriated skin or after an insect bite. The period of incubation is from fifteen days to six months. Fever, headache, rheumatoid pains and digestive disturbances may precede the raspberry-like excrescences on face or legs, which later become similar to psoriasiform syphilids in secondary and tertiary syphilis. Another variety has the aspect of isolated folliculitis. Yaws is often accompanied by a general adenopathy. The features common with syphilis, he says, are the micro-organism, *Spirochaeta pertenuis*, which is morphologically identical with *Spirochaeta pallida;* positive Wassermann reaction, and the same efficiency of mercury, iodin, bismuth and especially arsphenamin therapy. Although to date the identity of syphilis and yaws has not been confirmed experimentally, he suggests that yaws may represent the primary syphilis found by Columbus. In the Aryan races it has progressively changed from the dermotropic and papillomatous form of hot regions to the dermotropic and neurotropic syphilis of the modern era, with an increasing neurotropic tendency in our day.

Chirurgia degli Organi di Movimento, Bologna

8: 425-528 (June) 1924

*Amputation Stumps. R. Leriche.—p. 425.
*Astragalus Arthrorisis. A. Mezzari.—p. 431.
Case of Multiple Deformity of Spine. R. Zanoli.—p. 457.
*Chronic Strontium Poisoning. G. Protti.—p. 470.
Interspinous Diarthrosis. G. Perna.—p. 477.
Traumatic Dislocation of Wrist. G. Forni.—p. 483.
*Evacuation of Spondylitic Abscesses. G. Valtancoli.—p. 496.
The Radio-Ulnar Gripper Stump. G. Bosch Arana.—p. 510.
Dislocation of Lumbar Vertebra. R. Zanoli.—p. 517.
Meteorologic Station at Codivilla Institute for Heliotherapy. S. Vacchelli.—p. 524.

Amputation Stumps.—Leriche discusses the disturbances in stumps as ideal objects for study of the nature of trophic phenomena and pain. His analysis of twenty cases and the outcome of operative measures have established, he declares, that all these disturbances are caused by reflexes generated in the neuroma formed as the nerves of the stump heal, and that all the reflexes are of sympathetic order and reach the periphery in the form of vasomotor disturbances. The route selected by the reflex determines whether the effect will be trophic disturbance or pain. In the cases with pain, the only effectual measure is to resect the root involved, and this should be done at once, without waiting until the subject becomes a morphin addict. Palliative measures, reamputations, radiotherapy, neurectomy merely waste time and efforts; radicotomy is called for at once. His insistence on the importance of the long and the short route as determining the nature of the disturbances was mentioned in these columns, June 21, 1924, p. 2088.

Correction of Drop-Foot.—Mezzari brings down to date the experiences with Putti's method of correcting paralytic talipes, a total of twenty-three cases under observation for from two months to four years. The aim is to check the movement of the foot, not to hold it stiff. An implant from the tibia is driven into the astragalus slanting, from the front. This restricts dorsal flexion to 110 degrees. He has coined the term "arthrorisis" for the procedure, as the opposite of arthrolysis, from *horizo*, "limit." It restored stability to the foot in nearly every case, only one failure being recorded, from insufficiency of the cuneiform bone.

Experimental Chronic Strontium Bone Disturbances.—Protti found that the strontium had not been entirely eliminated until the fiftieth day after its suspension. The process of repair did not start as long as any strontium was still present in the bone.

Evacuation of Spondylitic Abscess.—Valtancoli introduced a trocar through an interspace into the prevertebral abscess, and thus evacuated it in eight cases. In the four with paralysis, complete recovery followed in one of the patients and marked improvement in the others except in one case in which the paraplegia was of a year's standing. In the four without paralysis, the cure was complete in all. The abscess was in the middle dorsal region of the spine and was easily reached by the straight trocar about 9 cm. long, grazing the top of the vertebra below.

Archivos Latino-Amer. de Pediatría, Buenos Aires

18: 193-240, 1924

*The Banti Syndrome. M. Acuña et al.—p. 193.
*Mistakes in Diagnosis of Tuberculous Meningitis. L. Morquio.—p. 213.
*Acute Leukemia. A. Carrau.—p. 221.
No Benefit from Sodium Cacodylate in Postencephalitic Contracture. S. E. Burghi.—p. 226.
Meningococcus Meningitis After Purpura. J. Bonaba.—p. 233.
Argentine Pediatrics Literature, 1910-1916. M. Areas Blanco and J. A. Trillo.—Conc'n.

The Banti Syndrome in Children.—Acuña, Bazán and Correas give a detailed and illustrated study of two children with symptoms resembling Banti's disease. The girl of 11 had a positive Wassermann, but the clinical picture continued to progress notwithstanding mercurial and arsenical treatment, and as everything indicated Banti's disease in its second phase, the enormously enlarged spleen was removed, but no benefit was apparent. The girl died the next day The liver showed pronounced atrophic cirrhosis but the spleen lacked the special Banti fibro-adenia; the sclerosis was of a different type. The case warns against splenectomy with grave lesions in the liver. The other patient was a boy of 6. The clinical picture suggested the first stage of Banti's disease but the normoblastic reaction of the blood excluded true Banti's disease. The grave anemia with destruction of blood corpuscles was combated by removal of the moderately enlarged spleen, and the blood picture at once began to improve. The subjaundice tint subsided and the child has increased regularly in weight during the five months since. Splenectomy is therefore able to cure the pseudo-Banti syndrome as well as genuine Banti's disease. The boy had had chickenpox, whooping cough and an acute pulmonary affection between 2 and 3. The Banti symptoms had been observed for nearly two years, beginning with high fever and enlargement of the abdomen. Splenectomy was resorted to when the erythrocytes had dropped to 2,830,000 and the hemoglobin to 45, the liver two fingerbreadths below the costal arch. In twenty-four hours after the splenectomy the erythrocytes had increased by nearly two million.

Cases Resembling Tuberculous Meningitis.—In Morquio's first case the symptoms presented by the boy, aged 7, and the findings in the cerebrospinal fluid apparently testified to tuberculous meningitis, especially as there had been repeated contact with a person under treatment for tuberculosis. The fifteenth day, however, other symptoms of mumps developed, and the meningitis disappeared during convalescence. In the second case spasmodic vomiting persisted for twenty days, with acetonuria, stiff neck, Kernig sign, slow pulse and headache, but the lumbar puncture fluid was normal. There had never been periods of vomiting before. The boy, not quite 6 years old, began to improve in the fourth week and was soon completely restored to health. Some comparatively transient toxic influence must have been responsible for the pseudomeningitis.

Acute Leukemia.—The girl of nearly 12 died the twelfth day after the onset of acute leukemia which had begun with facial paralysis, without premonitory symptoms. The child had always been healthy, except for measles and whooping cough over six years before. Four days before death, the leukocytes numbered 570,000.

Medicina Contemporanea, Lisbon

42: 177-184 (June 8) 1924

*Curable Cirrhosis of the Liver. J. Porto.—p. 177.

Curable Cirrhosis of the Liver.—Porto adds another case to those on record in which unsuspected inherited syphilis had induced the clinical picture of cirrhosis of the liver with ascites. Under specific treatment the young man's clinical recovery was approximately complete after five years of symptoms. Porto reviews the literature on the subject, including Miller's study of the influence of prohibition on cirrhosis, in The Journal, June 11, 1921.

Revista Española de Medicina y Cirugía, Barcelona

7: 315-377 (June) 1924

*Innervation of the Viscera. O. Renner.—p. 315.
*Vegetable Fibers as Suture Material. Oliveras Devesa.—p. 319.
Lead Poisoning from Ingested Shot. J. Valls Campaner.—p. 328.

Mutual Relations Between Visceral Innervations.—Renner discusses in particular the innervation of the renal apparatus in its reciprocal relations with the digestive tract. He asserts that much of the reflex action between them escapes our present methods of investigation, and still more has been overlooked from lack of bedside study of patients.

Vegetable Fibers for Suture Material.—Oliveras Devesa denounces the practice of boiling silk repeatedly, as this destroys its usefulness for suturing. His research has confirmed that linen is the only representative of the vegetable kingdom suitable for suture material on the surface and in the depths when catgut is not flexible enough for the purpose. The advantages of linen over silk are its greater strength, easy sterilization and less pain in removal, while vegetable fibers in general resist the action of the body fluids better than animal fibers. His tests of ramie have demonstrated that this is promising for suture material.

Sciencia Medica, Rio de Janeiro

2: 219-272 (May 31) 1924

*Isolation of Leptospira Icteroides at Bahia. O. Torres.—p. 219.
The Cerebrospinal Fluid in Yellow Fever. W. H. Hoffmann.—p. 242.
Principles for Treatment of Syphilis. N. Barbosa and C. Pinto.—p. 244.
Case of Associated Leishmaniasis and Blastomycosis. C. B. Magarinos Torres and A. E. de Aréa Leão.—p. 256.

Isolation of Leptospira Icteroides at Bahia.—Torres states that 157 cases of yellow fever were registered in 1923 at Bahia, with forty-five deaths. On Noguchi's arrival, in November, blood was obtained from nine persons who had had the disease. The Pfeiffer reaction with their serum and strains of leptospira which Noguchi had brought was constantly specific, with complete microbiolysis, while the response was constantly negative in the numerous controls.

Semana Médica, Buenos Aires

1: 1067-1118 (June 5) 1924

*Spiral Suture Needle. L. Samengo.—p. 1067.
Oriental Sore. A. A. Fernández and A. Bigatti.—p. 1074.
Phosphaturia and Its Treatment. F. E. Grimaldi.—p. 1082.
Carbonated and Radioactive Mineral Waters. P. Castro Escalada.—p. 1084.
*Specific Gravity of Diabetic Urines. A. Podestá.—p. 1101.
*Extraction of Foreign Bodies. J. Dellepiane Rawson.—p. 1101.
Phlegmonous Periurethritis. J. Salleras.—p. 1105.
Vaginoscope. M. T. and N. Gaudino.—p. 1106.
Prognosis and Treatment of Asystolia. J. V. Jiménez.—p. 1107.
Treatment of Tardy Ulnar Paralysis. P. Jáuregui.—p. 1110.

Helicoid Suture Needle.—Samengo's needle forms a spiral of two, three or more turns, the eye in the tip, with a stout handle. The needle is of triangular shape, and the spiral passes easily through the lips of the incision. As it is drawn back after threading, the resulting stitches are all alike and equidistant. The suture can be continued, or the thread can be cut for interrupted sutures. He gives seventeen illustrations in this preliminary communication.

Specific Gravity of Diabetic Urine.—Podestá relates that in 3,000 urine charts, glucose was noted in the urine in 85 per cent. when the specific gravity was 1.030; in 18 per cent. with density of 1.025; in 8 per cent. with 1.020, and in 3 per cent. with 1.015. These figures confirm John's statement in THE JOURNAL, Dec. 8, 1923, that the specific gravity alone is not a criterion for or against the presence of sugar in the urine. Podestá has one patient with specific gravity never above 1.022, and yet the urine contains regularly 1 to 1.5 per cent. of glucose. Other patients with a specific gravity of 1.032 to 1.034 never have a trace of glucose; there is generally pronounced urobilinuria in these cases.

Extraction of Foreign Bodies.—Dellepiane Rawson relates that in three years of experience with the technic illustrated he has never had the slightest trouble in removing the foreign body. For a fragment of a needle in the hand, for example, he marks the location as shown by the roentgen rays, and then works a curved needle through the soft parts below it, perpendicular to its longest axis. An assistant holds the curved needle firm, his hand and the needle handle veiled with a compress The needle lifts the foreign body up closer to the surface, and the operator cuts lengthwise of the needle, thus reaching the foreign body at once, without displacing it.

Deutsche medizinische Wochenschrift, Leipzig

50: 827-866 (June 20) 1924

Pernicious Anemia. Seyderhelm.—p. 827.
*Wassermann's Tuberculosis Reaction. L. Lange and G. Heuer.—p. 832.
*Pneumoconiosis and Tuberculosis. F. Ickert.—p. 832.
Water Content in Epidemic Dropsy. H. Gerhartz.—p. 834.
*Hypnosis in Children. K. Mosse.—p. 835.
Suggestion in Children. C. Pototzky.—p. 838.
*Sex Intercourse in Children. W. Schönfeld.—p. 841.
*Serum Prevention of Plague. O. Cherefeddin.—p. 842.
*Hypnotism. Levy-Suhl.—p. 843.
Operative Treatment of Lisping. Franke.—p. 844.
Simplified Meinicke Reaction. E. Schilling.—p. 844.
*Use of Chalk in Diarrhea. Fürbringer.—p. 845.
*Pluriglandular Obesity. M. Porges.—p. 846.
Traumatic Polyarthritis. H. Zagelow.—p. 846.
Unilateral Atrophy of Kidney. O. Holzapfel.—p. 847.
A Small Microscope. F. K. Reinsch.—p. 847.
A New Suspensory. Heymann.—p. 847.
Recent Progress in Infectious Diseases. O. Moog.—p. 848. Conc'n.
*Mortality in Germany. E. Roesle.—p. 850.
Czechoslovak Regulations on Venereal Diseases. Galewsky.—p. 851.

Wassermann's Tuberculosis Reaction.—Lange and Heuer tested complement fixation with Wassermann's new tuberculosis antigen in 220 serums. The positive results were specific, but the results varied in different laboratories. This is partly due to different adsorption of lecithin. The reaction must be read at the end of the experiment because many weaker inhibitions disappear on standing, in spite of the small amount of complement used. Emulsions of tubercle bacilli which were not freed from fat gave strong reactions with tuberculous and weak with syphilitic serums.

Pneumoconiosis and Tuberculosis.—Ickert observed about 400 cases of pneumoconiosis with tuberculosis among the men working in the copper-slate mines of Mansfeld. The dust inhaled consists of lime, silicates, aluminum oxid and bitumen. It seems to mitigate the course of tuberculosis. Only one of them, who had been working for two and one-half years, had a caseous pneumonia. Cirrhoid types were present in the others. The men suffer from dyspnea, due probably to cirrhosis of the lungs, and die between the ages of 50 and 60. This is later than in other tuberculous persons. Many of them have bacilli in the sputum and spread the disease because they feel comparatively well. He counted 35.5 per cent. of infections and deaths from tuberculosis in their families.

Hypnosis in Children.—Mosse tried hypnotism in the treatment of two children with chorea and believes that he made the situation worse. Fair results may be obtained with enuresis and hysteria.

Sex Intercourse in Children.—Schönfeld observed before the war cases of sexual intercourse between children of the higher social strata. These children have developed in the meantime into normal adults of high moral standing. The economic distress accompanying and following the war contributed much to the spreading of such habits among the lower classes and in small villages. He publishes a group of gonorrhea and another of syphilis cases acquired by more or less complete sexual intercourse between children of 6 and 7, and of 8 and 13 years of age, the girls being the instigators.

Antiserum Prevention of Plague.—Cherefeddin injected from 20 to 40 c.c. of antiplague serum in all persons who had been in close contact with a case of pulmonary plague not diagnosed before death. Among them was his assistant who cut himself twice in the hand when making the postmortem. No infection occurred.

Hypnotism.—Levy-Suhl shows that no unknown physical or mystic forces are necessary to produce a hypnotic condition. The conviction of the patient is the only important thing. Every hypnosis is an autohypnosis aided by the physician.

Use of Chalk in Diarrhea.—Fürbringer had excellent results in treatment of diarrhea with three teaspoonfuls of calcium

carbonate daily. The powder must be discontinued, however, in time to avoid formation of hard and even dangerous scybala of chalk.

Pluriglandular Obesity.—Porges uses mud baths in pluriglandular obesity. A diet poor in chlorids may be of use.

Mortality in Germany.—Roesle publishes German mortality statistics for the year 1923. They show that the death rate in the large German cities is approaching the European minimum. This may be due to the lower birth rates and the selective influence of the food deprivations during the war.

Deutsche Zeitschrift für Chirurgie, Leipzig

186: 1-144 (June) 1924

*Pleural Empyema. W. F. Suermondt.—p. 1.
Phosphorus Content of Blood in Diseases. F. Wohlfarth.—p. 20.
*Acute Perforation of Ulcers. H. Engelsing.—p. 25.
Movability of the Pancreas. E. Melchior and F. Klauber.—p. 41.
*Recurrence of Pains After Cholecystectomy. E. Steden.—p. 59.
Treatment of Carpal Ganglion. Neumüller and Orator.—p. 69.
Vascular Communication in Parabiosis. Duschl and Nickau.—p. 76.
*Sinus Pericranii. W. Sudhoff.—p. 98.
Supernumerary Bone in Wrist. A. Heimerzheim.—p. 114.
*Ileus from Retained Gastro-Enterostomy Button. T. Beer.—p. 120.
Advantages of Catgut That Can Be Boiled. W. Noetzel.—p. 128.
Analysis of 347 Appendicectomies. R. Engel.—p. 135.
Loss of Erections After Injury of Pelvis. Dumpert.—p. 140.

Empyema in the Pleura.—Suermondt had a mortality of 15.8 per cent. in 185 children under 12, and of 7.7 per cent. in 103 patients over 12. Analysis of these fatalities and of the outcome in all teaches that the open and closed methods of treatment do not compete with but should supplement each other. At first, while the general condition is at its worst, punctures and aspiration answer the purpose, but as soon as the process has become encapsulated, that is, in about two weeks, the eighth or ninth rib should be resected, generally in the posterior axillary line. He irrigates but does not use antiseptic fluids for this until a week after the resection, for fear of shock. Inhalation of oxygen under slight overpressure is useful to encourage expansion of the lung in addition to active measures such as blowing up an air cushion, etc. None of the children developed any tendency to curvature of the spine after the rib resection. The only child in his total experience with empyema, whose spine was not symmetrical thereafter, was a pneumococcus case in which intervention had been restricted to multiple punctures.

Perforation of Gastric and Duodenal Ulcers.—Engelsing comments on the increasing prevalence in Germany, Austria and Russia since the war of acute perforation of peptic ulcers, adding that the death rate has been much reduced since Speck's compilation of 3,224 cases, with mortality of 42 per cent. He ascribes this to the practitioners' earlier diagnosis. In his own experience in the last four years with thirty-eight cases, the mortality was 6.2 per cent. in the fifteen cases in which the operation followed in less than six hours, and 60 per cent. when twenty-four hours or more had elapsed. No attempt at resection was made; he merely closed the perforation with a double row of stitches, and the complete cure from all disturbances to date confirms, he says, the wisdom of conservative measures.

Recurrence of Pains After Cholecystectomy.—Steden removed the gallbladder in twenty-three cases without gallstones, the colic pains evidently ascribable to stasis of bile. Only 50 per cent. have been free from pains since. In one case the recurring pains were so severe that an overlooked duodenal ulcer was suspected, but nothing to explain the pains could be found at the second laparotomy. In another group of twenty-two men and 142 girls or women, the gallbladder had been removed on account of gallstone disturbances. Only fifty-six in this group have been free from pains since; in 15 per cent. the recurring pains have been severe. In the cases with recurring pains in both groups, there was usually a history of preceding functional disturbances and some had been operated on for wandering kidney or chronic appendicitis. One should be wary in operating in such cases. Inflammatory processes or their sequelae in the biliary passages or spasm of sphincters must be accepted as the explanation of the recurring pains in the majority of cases.

Sinus Pericranii.—Sudhoff calls attention to the advantage of plugging with wax or paraffin the opening in the skull after the operation for the small tumor in the skull known variously as false varix of the skull, osteovascular fistula or venous aneurysm. This dispenses with the necessity for an extensive plastic operation, and relieves all fear of hemorrhage. Five cases are reported.

Ileus from Retained Murphy Button.—The retained button caused no disturbance for three years; then vague symptoms developed and persisted for ten years. Then obstruction in the small intestine called for an emergency laparotomy which disclosed the button, enlarged and plugged by concretions to nearly twice the original weight.

Klinische Wochenschrift, Berlin

3: 1153-1200 (June 24) 1924

Action of Environment on Organisms. H. Stieve.—p. 1153.
*Insulin and Glucose Oxidation. G. Ahlgren.—p. 1158.
*Protein Sensitization in Syphilitics. H. Biberstein and F. Oschinsky.—p. 1160.
*Gastric Secretion and the Pupils. D. Adlersberg and F. Kauders.—p. 1161.
*Spontaneous Hemostasis. H. Stegemann.—p. 1163.
Functional Diagnosis from the Uterine Mucosa. W. Lahm.—p. 1166.
The Hemostatic Crisis. M. Holler.—p. 1168.
*Action of Mineral Water. R. Roubitschek.—p. 1173.
Metacarpophalangeal Reflex. C. Mayer.—p. 1174.
*Action of the Reticulo-Endothelia. S. Katsunuma.—p. 1175.
*Epinephrin Reaction in Hypertension. E. Kylin.—p. 1175.
*Radial Paralysis After Injection. E. Straus.—p. 1175.
Present Status of Symphysiotomy. Kupferberg.—p. 1177.
*The Constitution from Standpoint of Serology. L. Hirszfeld.—p. 1180.
Chart for Sedimentation Test Findings. W. Raykowski.—p. 1197.
Staining Spirochetes. J. Szilvási.—p. 1197.

Insulin and Glucose Oxidation.—Ahlgren used the reduction of methylene blue as an indicator of the respiration of surviving frog muscles. He found it best to use hibernating animals because their muscles are lacking in insulin. The action of insulin in a buffered 0.5 per cent. glucose solution had a distinct optimum at a concentration of 10^{-13} and an inhibiting action above $10^{-6.5}$. The latter is due to a toxic action of the insulin or to some impurity associated with it. This observation explains some of his own former seemingly negative results. Another important condition is the short time allowed to elapse between killing the animal and the experiment. The accelerating action of insulin on the respiration of the surviving muscle is evident only for from one and one-half to two hours. When used later it had an inhibitory action, while epinephrin still kept its accelerating influence. Addition of a lactate shortened the reduction time even in such muscles. He concludes that the whole action of insulin consists in a change of glucose molecules into something which can be oxidized. It is not necessary to assume a complex influence. Nevertheless, this action requires the presence of another still unknown substance which is destroyed comparatively rapidly after separation of the muscle from the organism—even before it loses its contractibility.

Protein Sensitization in Syphilitics.—Biberstein and Oschinsky sensitized the skin with serum from guinea-pigs and sheep. The experiment succeeds regularly in healthy persons. The majority of syphilitics with a positive Wassermann reaction did not react to a reinjection.

Gastric Secretion and the Pupils.—Adlersberg and Kauders measured the width of the pupil before and after meals in thirty subjects, including ten with anacidity. They confirm fully Wieland and Schoen's observation on the physiologic narrowing of the pupils after meals, attributed to the increased carbon dioxid tension in the blood. The anacid patients showed no changes.

Spontaneous Hemostasis.—Stegemann investigated details of bleeding and spontaneous hemostasis in blood vessels of various sizes. In medium sized arteries the blood pours out at first and even the stream in the next side-branches is reversed. Very soon the flow slows down, repeatedly changes its direction, and at last even the blood from the severed artery streams into the narrower side-branch instead of pouring out. The cone-shaped severed end offers a certain degree of resistance, and the contraction of the vessel—especially in very small arteries—contributes also to the hemostasis. A

thrombus begins to form only after the stream becomes slower. A pressure on the lateral branch overcomes it quite easily. Thus it seems that the first phase of spontaneous hemostasis consists in directing the blood stream into other channels. This is especially evident in the capillaries. He calls it self-steering of the circulation (Selbststeuerung des Kreislaufs).

Action of Mineral Water.—Roubitschek observed a more marked diuresis after intake of tap water than after the mineral waters of Karlovy Vary (Carlsbad), especially when he added more salts to the latter. Cold tap and mineral water had a stronger diuretic action, while the more concentrated salt solutions produced a better diuresis when warm.

Action of the Reticulo-Endothelia.—Katsunuma found after reinjections of cocci or blood corpuscles an increase in phagocytosis on the site previously injected.

Epinephrin Reaction in Hypertension.—Kylin injected 0.005 or 0.01 mg. epinephrin in patients with essential hypertension and determined the blood pressure at half minute intervals. He found, almost constantly, a lowering between 5 and 30 mm. of mercury. The whole reaction subsides within from three to five minutes. Treatment with calcium and atropin was followed by an increase in pressure after epinephrin.

Radial Paralysis After Injection.—Straus describes a case of paralysis of the musculospiral nerve which developed in about nine hours after subcutaneous injection, on the arm, of a preparation of arsenic.

The Constitution from Standpoint of Serology.—Hirszfeld considers the autohemagglutination in the cold as a narrowing of the "thermic amplitude" of agglutination by the serum. This amplitude is sometimes so broad that it may be impossible to count the cells except in a warm solution. If such a serum is absorbed by corpuscles at a certain temperature, it still retains its action at lower temperatures. Therefore, it is necessary, in all the investigations on autoagglutinins, to let the serum separate in the incubator. The group receptors are inheritable independently of anatomic characters.

Münchener medizinische Wochenschrift, Munich

71: 813-848 (June 20) 1924

Skin and Action of Insulin. E. F. Müller.—p. 813.
*Intracutaneous Test for Cancer. F. Hoff and K. Schwarz.—p. 816.
Regulating Shock Treatment. A. Zimmer.—p. 818.
Biologic Diagnosis of Pregnancy. K. Fink.—p. 822.
Diagnosis of Interstitial Pregnancy. H. Kiehne.—p. 824.
Agglutination of Spirochaeta Pallida. K. Blum.—p. 826.
Shock Treatment in Tuberculosis of Children. Kretschmer.—p. 826.
Constitution and Psychiatry. Moser.—p. 829.
Common Endocrine Disturbances. K. Stoevesandt.—p. 831.
*Sterilization of Rubber Gloves. Lothar am Ende.—p. 835.
*Action of Roentgen Rays. L. Lührse.—p. 836.
"Erysipeloid." E. v. Redwitz.—p. 837.
"Pathology of Twins." L. Leven.—p. 837.
Dosage of Tuberculins. E. Fuld.—p. 837.
Diabetes Mellitus. F. Umber.—p. 839.

Intracutaneous Test for Cancer.—Hoff and Schwarz used Mertens' method consisting of intracutaneous injections of serum from cancer patients irradiated with roentgen rays. They added injections of normal serum as control. Fourteen cancer patients gave at some time a positive reaction, while seventeen controls were negative, with the exception of a lymphatic pseudoleukemia, pernicious anemia and an undiagnosed case. They discuss the histologic changes in the reacting area.

Sterilization of Rubber Gloves.—Lothar am Ende recommends sterilization of rubber gloves in a sodium hypochlorite solution. A concentration of 0.382 per cent. chlorin insures the effect within one hour.

Action of Roentgen Rays.—Lührse recalls a case of partial necrosis of the lower jaw from local application of arsenic in a tooth. The necrosis was progressing. The patient was subjected, for diagnostic purposes, to an examination with the roentgen rays which had just then been discovered. The roentgenogram obtained after forty-five minutes of irradiation was of no use, but the arsenic necrosis healed. He believes that this was the first roentgen picture of the head, and the first—though not intended—therapeutic application of these rays.

Wiener klinische Wochenschrift, Vienna

37: 635-660 (June 26) 1924

*"Blockage Treatment." P. Saxl and F. Donath.—p. 635.
*Iodin Treatment of Pernicious Anemia. G. Holler.—p. 637.
*Dosage in Thyroid Treatment. E. Nobel and A. Rosenblüth.—p. 641.
*Intra-Articular Injections of Iodid. H. Schlesinger.—p. 643.
Pressure Treatment of Varicose Ulcers. G. Nobl.—p. 644.
*Pyogenic Sarcina. W. Robitschek.—p. 646.
Phlorizin Test for Pregnancy. M. Harnik.—p. 647.
Treatment of Impotence. Lissmann.—p. 648.

"Blockage Treatment."—Saxl and Donath studied the influence of injections of colloidal silver on subsequent infusions of other substances. They found that water, dyes and drugs remain much longer in the circulation when injected ten minutes after an intravenous injection of 10 c.c. of colloidal silver. The pressor action of epinephrin was also prolonged. They attribute these changes to a functional blocking of the reticulo-endothelial apparatus. Some therapeutic results in infections were promising. They call it "blockage treatment."

Iodin Treatment of Pernicious Anemia.—Holler found no iodin in the thyroids in pernicious anemia cases. He treats the condition—preferably after splenectomy—with small doses of the drug internally (three times 3 to 5 drops of a 5 per cent. solution of potassium iodid) daily for years. The immediate action of arsenic is better, and may be combined with it. The permanent results are attributed to the iodid. He reports on a grave case with apparent recovery. The patient suffered also from pulmonary tuberculosis and this, too, seems to have been healed—perhaps by the nonspecific effect of long periods of hemolysis.

Dosage in Thyroid Treatment.—Nobel and Rosenblüth determined the optimum dose of thyroid in children with myxedema. They recommend the use of 0.01 mg. per square of the centimeters of the sitting height. For instance, with a sitting height of 60 cm. the dose is 60 times 60, or 3,600 times 0.01 mg., which is 0.036 gm. of the dried gland.

Intra-Articular Injections of Iodid.—If other treatment fails, Schlesinger injects between 0.2 and 1.0 c.c. of a 10 per cent. sodium iodid solution into the joints affected with late syphilis. The pain is slight and the improvement begins, sometimes, after an hour. The Wassermann reaction with the blood is negative in the majority of such late syphilitic affections of the joints. It may be positive with the puncture fluid.

Pyogenic Sarcina.—Robitschek found in the pus from a cellulitis sarcinae which formed a brownish orange color in the cultures.

Zentralblatt für Chirurgie, Leipzig

51: 1159-1222 (May 31) 1924

Ligation of the Common Carotid. E. Kosterlitz.—p. 1161.
The Vasomotors and the Drop in Blood Pressure in Intraspinal Anesthesia. H. Ziegner.—p. 1163.
*Segmentation of the Femur in Rickets. A. Rudolf.—p. 1165.
*Blocking of Vagus Nerve in Abdominal Operations. Ahrens.—p. 1167.
*Pneumoroentgenography of the Bladder. P. Rosenstein.—p. 1169.

Segmentation of the Femur, After the Springer Method.—Rudolf performed segmentation of both tibias, which were badly curved, in a child aged 4, securing a good cosmetic result and a lengthening of the legs by 3 cm. Thus encouraged, he applied the method to the femur (also highly curved) of a child aged 2 years and 6 months, with equally good results. As far as he knows, this is the first instance in which segmentation has been applied to the femur.

Blocking the Vagus Nerve in Abdominal Operations.—Finding that postoperative lung complications occurred rather frequently, Ahrens has endeavored—at first in operations on the stomach, but later also in other interventions—to interrupt through blocking of the vagus nerve reflex processes that might possibly be induced by the abdominal organs. Immediately after opening the peritoneum, he injected, in the anterior wall of the stomach and then, through an opening in the gastrocolic ligament, along the posterior wall and in the same vertical plane, 20 c.c. of a 0.5 per cent. solution of procain-epinephrin solution. He has employed the method in twenty-one cases, and he observed that certain mechanical injuries, such as traction on the stomach, which, at operation,

usually cause a slowing and weakening of the pulse, no longer had any effect on it. No postoperative pneumonic processes developed in any case. The anesthesia (with ether and a little chloroform) took a quieter course than usual, without disturbance of respiration. The patients, on coming out from under the anesthetic, felt unusually well. There was no evidence of postoperative shock.

Pneumoroentgenography of the Bladder. — Rosenstein has applied pneumoroentgenography of the bladder to clear up puzzling diagnostic questions in regard to bladder tumors; also hypertrophy of the prostate, bladder diverticulum, stone formation, ureter diverticulum, etc. He reports two cases, in one of which pneumoroentgenography saved the patient from a useless operation; in the second, a tentative diagnosis was made certain. For injection he uses oxygen.

Zentralblatt für Gynäkologie, Leipzig

48: 1233-1280 (June 7) 1924

Protein Therapy and Vaccine Therapy in Gonorrheal Adnexitis. E. Weinzierl.—p. 1244.
*Hemoclastic Crisis in the New-Born. Simon and Wellewa.—p. 1250.
*Subnormal Temperature in the New-Born. P. von den Steinen.—p. 1254.
*Oxygen in Asphyxia Neonatorum. E. Holzbach.—p. 1256.
Premature Separation of Placenta by Kielland Forceps. J. P. Greenhill. —p. 1258.
Anuria as Early Symptom of Ruptured Extra-Uterine Pregnancy. A. Mandelstamm.—p. 1260.
Cesarean Section with Atresia of the Vagina. H. Brossmann.—p. 1262.
Transperitoneal Cesarean Section in Eclampsia. A. Wagner.—p. 1263.

The Hemoclastic Crisis and Jaundice in the New-Born.—The leukocytes were counted in thirty-nine infants less than 12 hours old, and again at brief intervals after the first intake of mother's milk (colostrum), milk from the mother of a little older infant, or unsweetened tea. Alimentary leukopenia was observed in over 50 per cent., even in the group that had been given only tea. There was positive coincidence of the leukopenia with development of icterus neonatorum in 77 per cent. of the twenty-one infants given mature milk and negative coincidence in 66 per cent. Simon and Wellewa accept these findings as testifying to stimulation of the vagus by the calling into function of the digestive apparatus; this induces dilatation of the peripheral capillaries, with leukopenia as the result.

Subnormal Temperature in Healthy New-Born Infants.—A temperature below 35 C. was common among the 100 infants tested.

Oxygen in Asphyxia Neonatorum. — Holzbach has been advocating for nearly two years the administration of oxygen to revive the newly born. He has given it by subcutaneous or intravenous injection, but for the last year has been administering it through the nose, and with constantly increasing satisfaction. The intake of the oxygen is promoted by light rhythmic compression of the chest, under manometer control.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

1: 2333-2460 (May 24) 1924

*Urine Changes with Enteritis. F. Hijmans.—p. 2334.
Insulin Treatment. D. G. Cohen Tervaert.—p. 2340.
Lymphatic Reaction in Acute Infection. Woltring and Hulk.—p. 2344.
Cystic Kidneys. F. S. P. van Buchem.—p. 2348.
Monophyletic Origin of the Leukocytes. H. C. Voorhoeve.—p. 2350.
Practical Measures to Combat Cancer. W. F. Wassink.—p. 2383.
*The Birth Rate Question. P. A. Barentsen.—p. 2389.

Transient Albuminuria from Colitis.—The girl of 18 was sent to Hijmans with the diagnosis of kidney stone as responsible for pains, considerable albuminuria, tube-casts and slight hematuria. None of the usual causes for the pathologic urine findings could be discovered, and it was found that the albuminuria and casts were only occasionally and transiently found in the urine, the findings corresponding to the attacks of pain. The colon was tender, and he assumed by exclusion that colitis was responsible for a reflex contraction of blood vessels, on a basis of vagotonia. An apparently harmless intestinal affection with vagotonia should be regarded with suspicion in every case of albuminuria with tube-casts and even hematuria, before ascribing them to nephritis, and especially when the urine findings fluctuate rapidly. Specimens of urine from different parts of the day should be examined separately.

Netherlands-Indian Civil Med. Service, Batavia

115-248, 1924

*The Plague in Java, 1911-1923. L. Otten.—p. 115.

The Plague in Java.—Otten is head of the plague prevention service in the Netherlands Indies, and in this long report he describes the efforts to stamp out epidemics by evacuation of the houses, fumigation and disinfection, after the introduction of the plague in 1911. Twelve years' experience has demonstrated the futility of such measures. Warehouses can be disinfected effectually but not human habitations in that country; rat proof construction is the only remedy. Preventive vaccination proved disappointing (Haffkine vaccine). The mortality was reduced by it scarcely 50 per cent. and the morbidity much less. Of the total 81,599 cases during the twelve years, nearly a third were in the last four years, and included about 2,000 cases of pneumonic plague. He states that the biologic relations between domestic rats and other species prevent active transmission of the plague by this means. The transmission is by commercial traffic. The virus is distributed to all parts of the world by ship and rail and is then conveyed to the smallest hamlets by cart, horse, bundle or basket. Human intercourse does not seem to be a significant factor in the transmission of the disease.

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Widal's Hemoclastic Crisis Not An Index of Liver Functioning. P. Freudenthal.—p. 353.
*Threshold for Blood Sugar. K. Faber and P. Iversen.—p. 362.

The Threshold for Sugar in the Blood.—It has been stated that in the healthy it seems to be impossible to raise the sugar content of the blood above a certain level, even with large intake of sugar. Diabetics lack the mechanism for this control of the glycemia level or it is defective, and tests to determine this lack may throw light on the gravity of existing glycosuria. Faber and Iversen found a somewhat abnormal blood sugar threshold in all but one of eleven patients who presented what seemed to be entirely harmless glycosuria. Instead of the normal 0.18, the "acceleration level," as it has been named, was 0.20 to 0.24. In three actual diabetics, on the other hand, the figure was 0.183 after intake of 100 gm. of glucose; 0.176, or 0.333. It is evident that the sugar threshold in diabetes is a complex problem.

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*Sodium Phosphate in Therapeutics. H. J. Vetlesen.—p. 337.
Deformity of Female Genitals. Three Cases. Brekke.—p. 342.
Pneumococcus Types in Norway. T. Thjøtta and Hanneborg.—p. 345.

Sodium Phosphate in Therapeutics. — Vetlesen has been loyal to sodium phosphate for thirty years, and says he has never had any reason for abandoning it for newer remedies, especially in the hundreds of cases of neurasthenia, psychasthenia and general weakness in which it has been his main reliance. In over 100 cases of simple goiter, the enlargement of the thyroid has been arrested if it did not retrogress to some extent. In seventy-seven cases of exophthalmic goiter, there were never any signs of intolerance and no contraindications were discovered. These patients are advised to take the drug indefinitely, for months or years, with short intermissions. With a few exceptions, they took the sodium phosphate according to the usual prescription, namely, a tablespoonful four times a day of a 15:250 solution, that is, about 4 gm. a day. He cites Embden's clinical and experimental research (1915) which apparently confirmed that phosphoric acid not only sustains and promotes muscular work but promotes all the vital functions in general. Von Noorden has been applying it of late in convalescence and as a general tonic in tuberculosis and diabetes, but did not find it of much use in exophthalmic goiter. In the latter disease, however, Goldscheider, Brugsch and His reported last year excellent results with this drug. Vetlesen says that under sodium phosphate treatment the nervous balance is restored, the heart tranquilized, the pulse rate slowed and the tremor subsides, while the goiter ceases to enlarge or grows smaller and softer.